

LESSONS IN TAXIDERMY



*Emile F. Backus
Mexico City
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A Comprehensive Treatise on
Collecting and Preserving all
Subjects of Natural History

BY

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BOOK I---Lessons 1 to 5

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LESSON ONE

General Observation—Important—Read Carefully

To the Student:

You are beginning to learn an art that is second only to painting and sculpturing. The true Taxidermist must be an artist. His work is truly an art, and differs from the ones just named in that one may learn it by carefully following the instructions, and in a reasonable time will be able to mount specimens fit for a place in any museum.

Right at the start we wish to impress upon our students the necessity of determined energy and patience. Nothing in this world worth having can be had without work. Our lessons are so clear, concise and condensed, that anyone can learn the methods and systems by carefully studying the same; but whether you become an efficient Taxidermist or not, lies largely with yourself. We do our part, and you must, of course, do yours. We think you are willing.

After learning the operations, it requires practice to become an artist, but he who is in earnest cannot fail. No reasonable being expects to become a musician, painter, or penman, by simply reading a description of these arts. He must first learn the details and then acquire the skill by doing. It is largely the same in Taxidermy, except it requires a comparatively short time to get very nice results. Simply **determine** to succeed; do not become discouraged; do not expect too much from your first attempt; use the same perseverance that you use in your own usual vocation, and you will succeed. Be careful, be patient, and study the art. Follow our instructions to the letter and you will be a Taxidermist, and a **good one**. In the following lessons you are getting the essence of all that is known on the subject.

You are getting the only system that has ever been an entire success, though many methods have been tried. It is the scientific method. Many of the details can be got by experience only, as you will discover. These lessons give you exactly what our personal students get. They, as well as you, **must practice** in order to get results. Observe all details and heed them. We present only the **essential facts**, omitting everything that might tend to confuse; hence, **every sentence means something** and deserves your most careful attention and consideration. **Study** the lessons.

Our students fully understand that the following lessons are written for the purpose of teaching them how to correctly mount natural specimens. We do not attempt to present a treatise on comparative anatomy, zoology, or on the scientific classifications in natural history. All of this matter can be obtained from text-books and does not belong to a course of lessons such as we use. The few works that have been published on Taxidermy make the mistake of attempting to combine the teaching of the actual operations necessary in mounting specimens, with the scientific knowledge, to such an extent that the average student loses sight of the object sought and becomes entangled in a maze of Latin words and scientific terms.

Our lessons are intended to **teach accurately**, and they do it in an admirable manner if the student follows them carefully and **practices** the work regularly.

LESSON TWO

Collecting Specimens

The student must of course secure his own specimens. The collecting of birds is not the least interesting part of Taxidermy. You will be familiar with your own neighborhood and will know where to go to secure the finest specimens of various birds. In the woods and fields and along the streams will be found many specimens suitable for practicing and for your permanent collection. Before collecting a specimen you should obtain as much information about its home, surroundings, etc., as possible. You will need this information in making up a real valuable scientific collection.

Most specimens will necessarily be secured by shooting them, but you can perhaps secure some with traps, which is to be preferred, as you will not have shot holes to contend with. The bird that is badly shot is not easily handled. If possible select those at first which have a few shot holes in the skin and are not badly soiled or bloody.

Guns and Ammunition

While you can use any shot-gun for collecting birds, it is best to select one of small bore, say 16 or 20 gauge. For small birds use a very fine size shot, No. 8, 10, 12 or dust shot.

You should arrange to load your own shells, using about 2 drams of powder and $\frac{1}{2}$ ounce of shot, or even a lighter load than this for very small specimens.

An old rifle that has been bored out smooth, can be used to fine advantage by shooting cartridges loaded with shot, which can be procured from any sporting goods dealer. Keep in mind the fact that the better condition your bird is in the easier it will be to mount it successfully. Shoot them "easy."

Care of the Specimens

After you have shot a bird handle it carefully so that the feathers will not be badly ruffled or broken. Wipe off the blood carefully from the feathers and then plug the shot holes and all openings in the body with cotton. Make a paper cone and drop the bird into it. This will keep the feathers in nice shape until you get it into the work room. Always prevent, if possible, getting the feathers disarranged, wet or bloody. You should understand, however, that even though you do get the feathers bloody or somewhat broken, by a little extra work the bird can be mounted right.

Killing Live Birds

If you secure a specimen any way or when shooting you only "wing" the bird, you should kill it in such a way that the blood will not flow out and spoil the plumage. Grasp the bird with the hand tightly just beneath the wings and squeeze very hard for a few minutes. This will prevent breathing, and in a very short time the specimen will be dead. The most humane way of killing a specimen, however, is to make a paper cone, in the bottom of which you deposit a small roll of cotton, after which pour chloroform liberally over the cotton and insert the bird's head in the cone for a few minutes.

Large specimens, such as hawks, owls, etc., may give you some trouble, but you can quickly kill them by plunging a sharp knife under the wing into the heart and allowing them to hang head downward while the blood flows from the mouth into the brain, which kills the specimen very quickly and without pain. If either of the latter methods are used, you should plug the wounds with cotton to prevent the blood flowing out and spoiling the plumage. In another lesson we give you several good methods for removing stains from the feathers.

Selection of Your First Specimens

Some birds are large and harder to skin than others, and for this reason you should select the easier ones for your first chance. We recommend a common pigeon, snipe or quail, although there are many other specimens that you can use just as well. If the wild birds are not available, then take common barnyard pigeons and use them for practicing. They are a little harder to skin in some ways than some other birds, but still they are very satisfactory.

Do not select ducks, geese or long neck birds, for you will find these a little harder to skin than many others, and we want our students to be highly encouraged with their very first efforts. Do not select birds that are either too large or too small until you have practiced on medium-sized ones.

We are going to teach you how to skin and mount birds of every possible description, but we want you to proceed naturally by easy stages and leave the harder specimens until you thoroughly understand the details of the operations.

LESSON THREE

Tools and Materials

There are a great many handy and useful tools that you can use in your Taxidermy work, but there are only a few that are absolutely necessary. The skinning and mounting of birds can be performed with such common instruments as most anyone has about his home, but we think it best for the student to have a number of the more important instruments. In Taxidermy work, the same as any other art, the quality of work depends very largely on plenty of good and appropriate instruments and materials. Following is a brief list of the instruments that we recommend:

- 1 Scalpel (skinning knife)
- 1 Bone Scraper
- 1 pair Bone Snips
- 1 Tape Measure ✓
- 1 Brain Spoon

- 1 Caliper
- 1 Cartilage Knife
- 1 pair Small Scissors
- 1 pair Pliers ✓
- 1 Bone Saw

We also recommend that the student secure a nice pocket case of instruments soon after starting the course, as it is very handy to have when out in the field collecting specimens. These cases are made either from leather or wood and contain the more necessary instruments used for skinning birds.

The material needed when skinning a bird should be about as follows:

Preservative

Corn Meal

Plaster-of-Paris

Cotton Batting

Brushes

Cloths

Potter's Clay

Tow

Preservatives

The question of a suitable preservative is an **important one**. It is, of course, absolutely necessary to place some chemical on a fresh skin to cure it and make it dry before it decays. Many and various things have been recommended for preserving bird skins, but after careful investigation we are sure that the ones offered are the very best ever devised.

Dry Preservative

Powdered alum, 4 ounces.

Powdered arsenic, 1 pound.

Mix together very thoroughly and keep in a tight vessel such as a glass fruit jar. This preservative is applied to the interior of the skin in its dry form. This mixture is **POISON**.

Paste Preservative

Many Taxidermists use arsenical paste, which they spread on the interior of the skin with a brush. We do not usually recommend this for small birds, although it is best for the larger ones. This paste is used almost exclusively for preserving animal skins. It is made as follows:

Powdered Arsenic, 1 pound.

Good Laundry Soap, 1 pound.

Cut the soap into small thin pieces. Place same in a quantity of water on the stove and allow it to come to a boil and stir until the soap is fully dissolved. Remove from the stove and stir in powdered arsenic. You should continue to **stir the mixture until it becomes cold**. If you do not stir it the arsenic will settle to the bottom, as it does not dissolve in water. When cold you will have a thick paste, which should be kept in a tight can or jar. If the paste becomes hard and stiff add a little warm water when you are ready to use it.

CAUTION—Both of the above mixtures are deadly poison and should be labeled "**Poison**" and kept in a safe place out of reach of children and animals.

NOTE—In using the dry preservative the powder will likely get on the hands, but there is no danger in its use unless there should be cuts or sores on the hands. If there should be, see that they are covered well with court plaster. Do not get the powder about the face. By using ordinary caution there is no danger whatever in using the preservative. We have many thousands of students and not a single one has had the least difficulty. If, however, the student does not wish to use the poison preservative, we recommend the dry powdered alum only. This will thoroughly preserve the skins, but does not make them absolutely moth proof, although the insects are not apt to bother the specimens if the alum is used liberally.

LESSON FOUR

Skinning Birds

Birds should never be skinned while they are warm, for the blood will flow out and is apt to soil the plumage. While these stains can be removed, yet it is a difficult matter and it is best not to get the blood on the feathers when it can be avoided.

Kill specimens several hours before you expect to work on them, or better still, allow them to lie over night. In cool weather a bird can be mounted after it has been dead for several days. In hot climates, however, they should be skinned as soon as they become stiff and the blood has become thick or coagulated. When a bird has been dead the required time, you may prepare for actual skinning. Get all the tools and material ready before you start. You should have a work table, which should be covered with paper, having an extra supply on hand so that the paper can be changed when it becomes soiled during the skinning process.

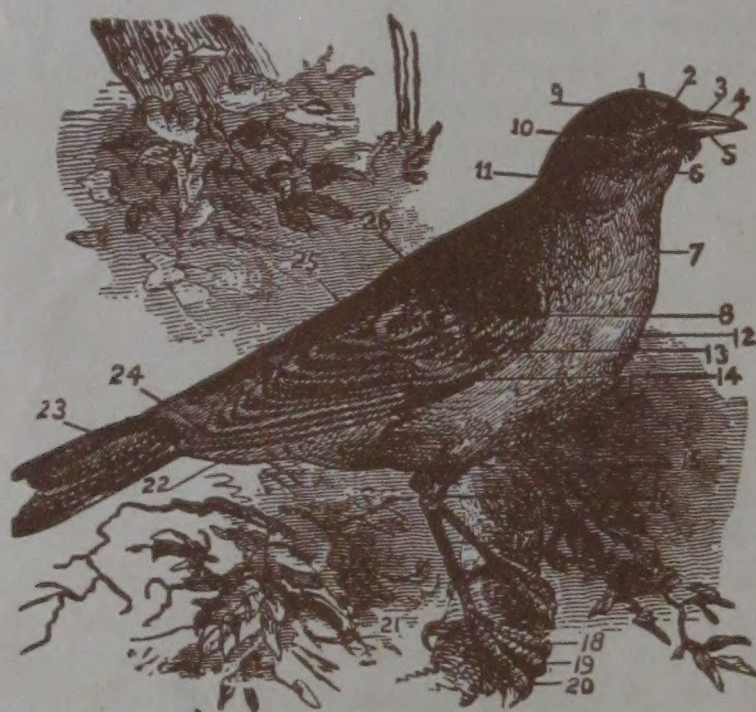


FIG. 10.—Names of the External Parts of a Bird.* 1, Crown; 2, forehead; 3 nostrils (or cere); 4, upper mandible; 5, lower mandible; 6, throat; 7, neck; 8, spurious quills; 9, occiput; 10, ear; 11, nape; 12, breast; 13, middle coverts; 14, large coverts; 15, belly; 16, tibia; 17 tarsus; 18, inner toe; 19, middle toe; 20, outer toe; 21, thumb; 22, under-tail coverts; 23 tail; 24, primaries; 25, secondaries; 26, tertiaries.

(From Horniday)

The Operation

Place the bird on the table with the back down and the head at your left hand. Tie a thread firmly around the beak and fill the mouth, nostrils and the vent and all shot holes that bleed with fresh cotton to prevent the blood from flowing out and staining the feathers. Now you may separate the feathers on the middle of the breast from the point of the breast bone to the vent. You will discover a bare space throughout this length on almost all birds. It is a great boon to the Taxidermist.

Spread the feathers carefully to the right and left with the fingers, brush or sponge and continue to stroke them until they remain in this position.

Now take a sharp knife or scalpel and make an incision in the skin from the point of the breast bone entirely to the vent opening (see **figure 1**), being careful not to crush the flesh on the breast, as the blood and fluids will flow out and soil the plumage. Skin right and left from this incision, pushing the skin from the flesh. With the scissors or knife, cut all tissues that refuse to separate easily.



Fig. 1

Continue in this manner until you reach the junctures of the legs with the body (**figure 2**). Now is the time that the corn meal is used. As soon as the flesh is exposed cover all parts with the meal in order to absorb the blood and moisture. Use it frequently as you proceed.

If the blood flows from any place, immediately apply cotton until the bleeding has ceased, and then cover the part heavily with dry plaster of Paris. Keep the feathers along the incision dry and brushed away from the opening. If the breast of the bird be white, we advise the student to place cloths over the edges of the skin and sew them fast with needle and thread until the skinning is done. This is an admirable thing to do when skinning all birds.

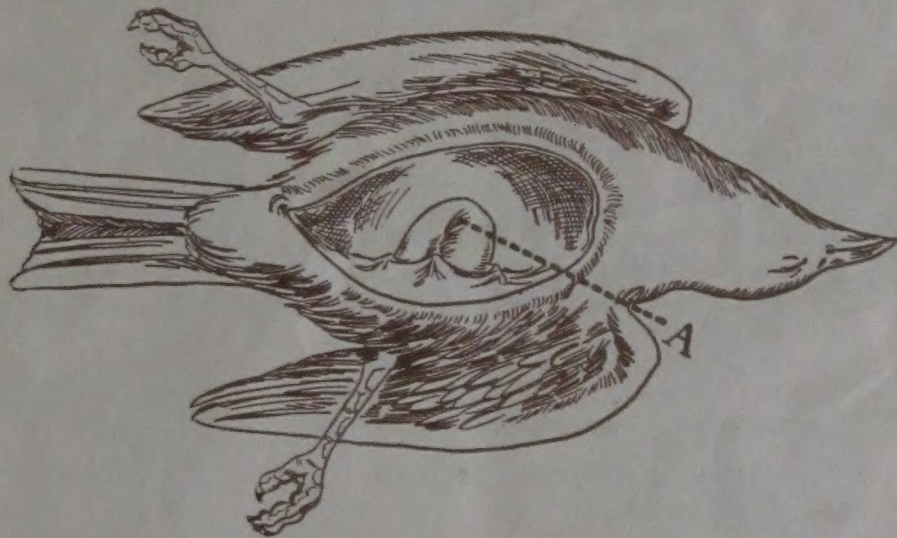


Fig. 2

Now grasp the leg and bend the knee joint, pushing it forward, and at the same time forcing the skin over the joint until it is exposed. Disconnect this joint at "A," **figure 2**, leaving the thigh on the body. Perform the same operation on the other leg. You can now, with your fingers, separate the skin from the body across the back in front of the tail.

With the knife or scissors cut through the base of the tail, leaving the tail feathers well imbedded, being careful not to cut the roots of these feathers, as they would fall out and the skin be ruined. Cut should be

made on line "B," figure 3. The tail may be severed before the student attempts to skin across the back. When this is done great care should be exercised that the skin is not cut. Take your time. Work carefully. A little haste often spoils the specimen at this point.

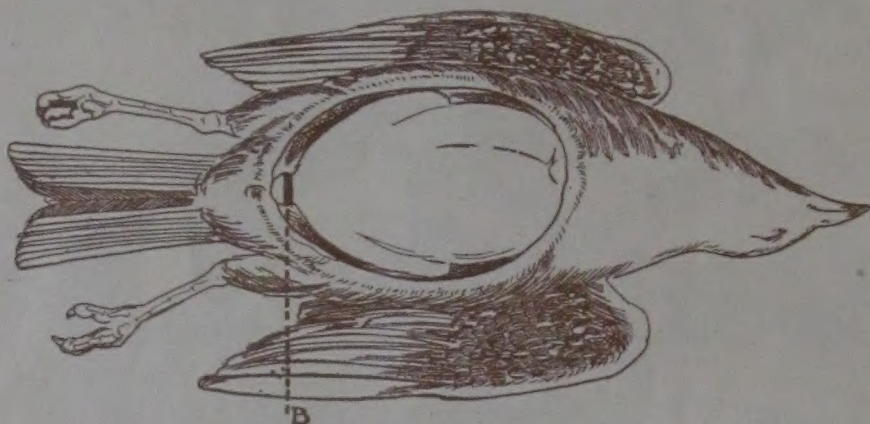


Fig. 3

After severing the tail, the rear part of the body is free from skin. It will now assist you to have a hook suspended from the ceiling at the proper height, and suspend the bird on the same, attaching it to the rump of the body (figures 4 and 5). This is almost necessary with large specimens.

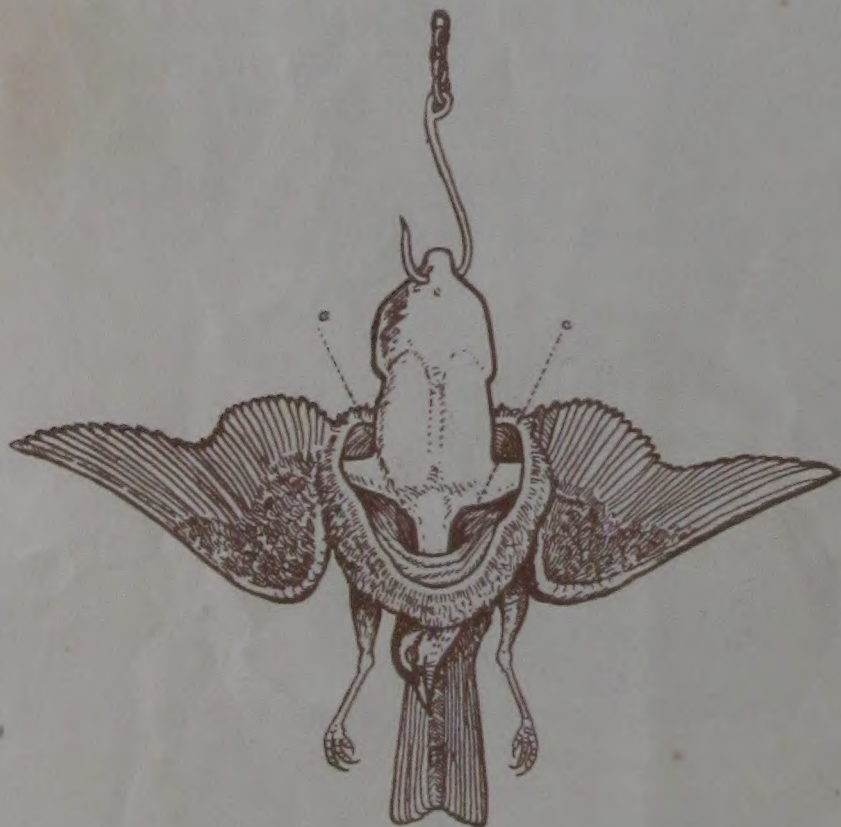


Fig. 4

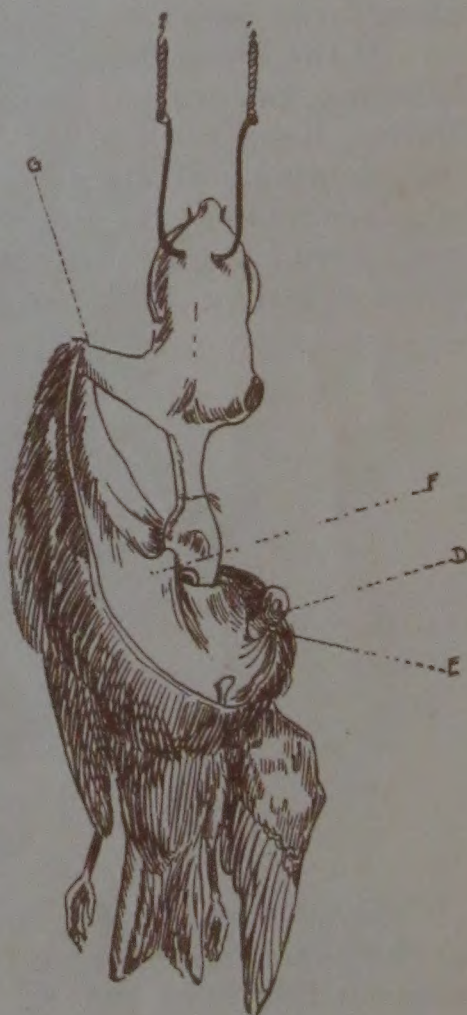


Fig. 5

You may now easily skin the body forward until the wings are reached. Detach them at the body point at "C," figure 4, and continue the skinning to the head, by inverting the skin over the head, as a person might remove a glove. Care must be used that the skin is not stretched.

Skinning the Head

When the head is reached, push the skin gently over the base of the skull, using the scalpel for cutting the tissue, when necessary. The ears are now reached. Cut the skin **close to the skull** ("F," figure 5), and continue to the eyes. A thin membrane will be found, which must be cut, using much care that the eyelids or balls are not injured.

After passing the eyes continue the skinning to the very base of the beak. Do not detach the skin from the head, but leave it fastened to the beak as shown in figure 7. After you have completed the skinning in this way cut off the head from the neck at the line "H" in figure 6. You should also cut off the back part of the skull, leaving the brain exposed as shown at "K" in figure 7.

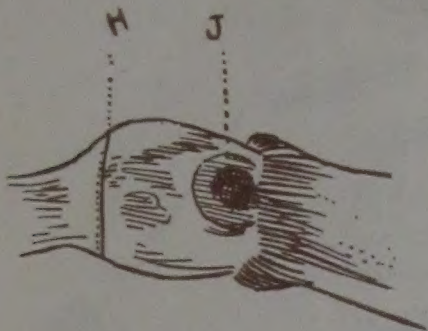


Fig. 6



Fig. 7

You will note that the back and underside of the skull is removed, but do not cut away the top of the skull. Cut as shown by the dotted line in figure 7. Now dig out the brain with a brain spoon, being careful to get it all removed. Lift out the eyes ("J," figure 6), using either a knife, scalpel or small block. Do not pierce the eye balls, as the fluid is apt to flow out and soil the feathers. Throw the eye balls away, as they are to be replaced later with artificial glass eyes.

Now cut and scrape away all flesh from the skull and remove the tongue, and on larger birds cut out the cartilage that forms the lining in the roof of the mouth. Do not detach the joint of the mandibles (or beak). It is very important that you get **all of the flesh removed** from all parts of the skull, for it will otherwise decay and cause the specimen to spoil. With the use of a scalpel, knife and scissors trim away all the fat that is clinging to the inside of the head and neck skin. Do all of this work rapidly, for it is necessary to turn the skin back over the skull before it becomes dry.

You will now cover the entire skull, inside and out, with a free application of the preserving powder. Get it into the "corners." The skin of the head and neck must also receive a liberal supply. Rub it well into the skin with several applications.

Fill each eye cavity with a ball of tow or hemp, or potter's clay. In small specimens the latter is to be preferred, and we often use it in the largest specimens, as it aids much in setting the artificial eyes. If tow is used be sure and wind it tight into a firm ball, of such size that it fills the cavity level full.

You are now ready to replace the skin over the head, which can be easily done after a few trials. Go slowly, pushing first at the top of the head and then underneath, as required. Figure 8 gives a clear illustration of how this should be done.

Remember that this work must be done **as soon as possible**, as the skin quickly dries after the preserving powder has been applied, and is then difficult to perform. If, however, the skin should become a little dry, simply dampen the skull with a wet sponge and the task will be much facilitated. The feathers have doubtless become much disarranged by this turning inside-out process, and you must now restore them to their original positions.

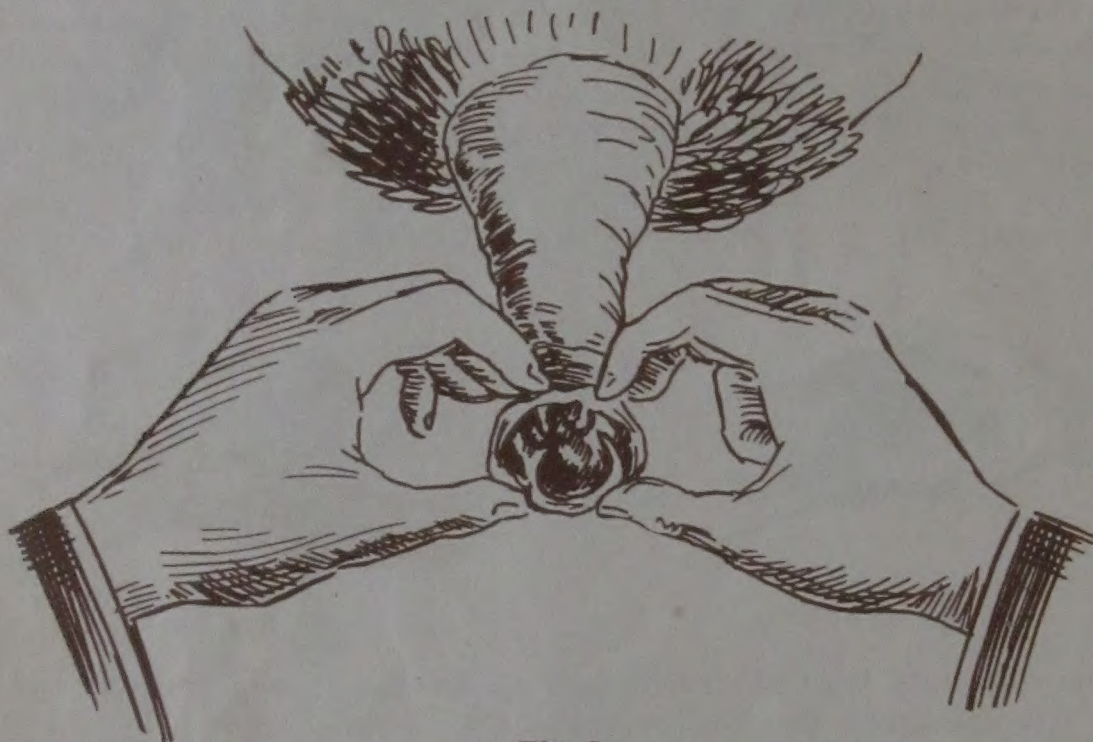


Fig. 8

First take the specimen by the bill and shake it briskly. After this insert a darning needle through the eye opening and rub the inside of the neck and head with considerable force, when you will find the feathers assume their natural positions readily. (**Figure 9.**) Do not be afraid to rub and stroke the feathers with hands and a brush, even quite hard, for they are often obstinate.

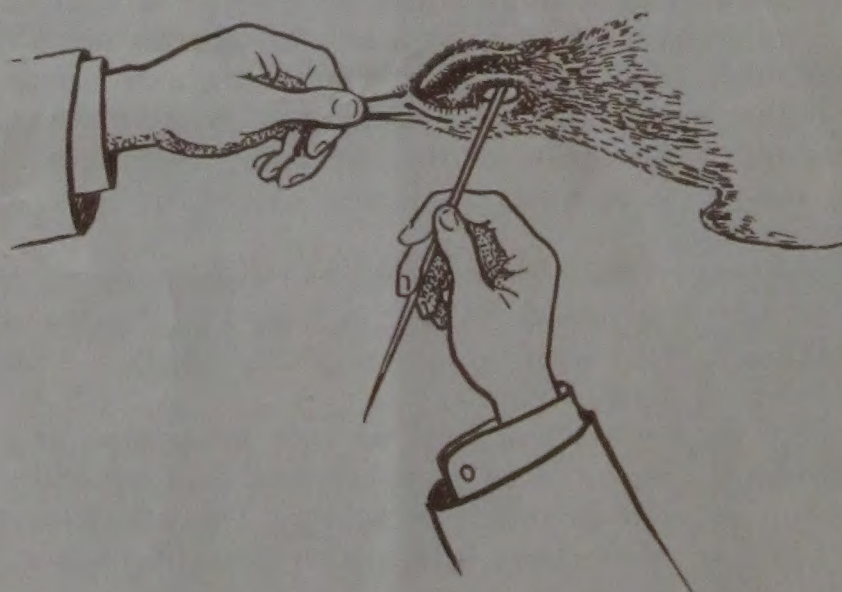


Fig. 9

In mounting small specimens up to the size of a crow, it is not necessary to replace the flesh and muscles that you have cut off from the skull, but on larger birds such as ducks, owls, hawks, eagles, etc., these muscles

must be restored or the specimens will not have the right shape and appearance. When mounting these larger birds you should replace the muscles with potter's clay while the skin is removed from the skull. Mix the potter's clay with water until it is smooth and soft and place it on the skull to take the place of the removed muscles. You can easily do this, as the clay will be wet and soft and the skin will slip back over it readily.

Skinning the Legs

We will now give our attention to the legs, which we have detached from the natural body and which have not yet been skinned. Invert the skin over the leg bone as far down as the heel joint; the heel in a bird being the first joint above the foot; see **figure 10**. In some birds, such as owls, where the feathers grow entirely to the feet, the legs should be skinned the full length, or as far down as the feathers grow.

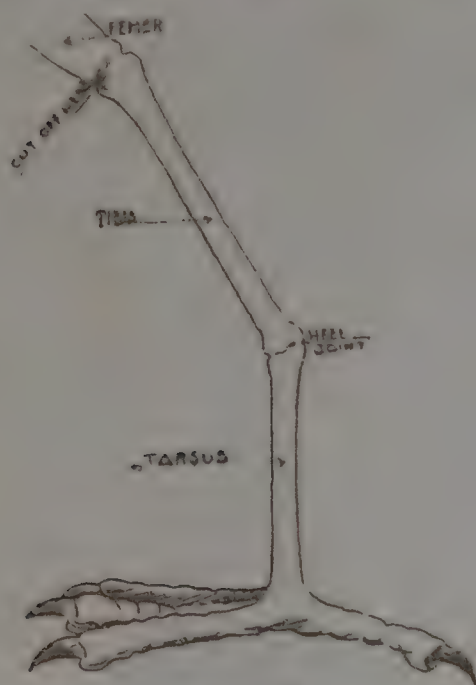
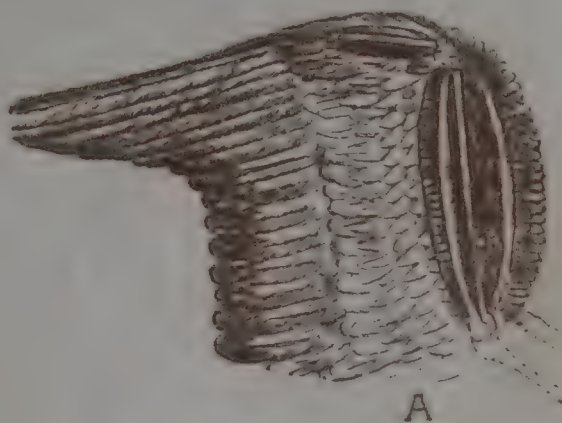


Fig. 10



Remove all the muscles and flesh from the leg bones, using a scalpel, bone scraper and scissors. Be sure and get every particle of flesh off the bone. After the flesh is removed the skin can be drawn back over the bone. In larger specimens it is necessary to cut open the bottom of the feet and remove the tendons from the legs. This process is discussed later in this lesson.

Skinning the Wings

First lay the wing flat on the table so you have a solid base to work on, then open the wing on the under side by making a cut the whole length of the large bones in each part and skin the wings in the same manner that you skinned the legs, by inverting the skin over the bone until you reach the first joint. Do not attempt to invert the skin beyond the first bone, called the "humerus." In **figure 5**, point "G" shows how far to invert the skin. "D" represents the one wing bone properly skinned. Study these illustrations carefully. Cut and scrape all the fat from the humerus bone and then bring the skin back to its original position.

Figure A shows clearly the two cuts to be made. Open up the feathers and make the incision, after which you scrape and cut away all the

fat and flesh possible, but do not detach the large feathers where they are anchored. After this is done, sprinkle preserving powder liberally along the wing bones. It is not necessary to sew up these incisions in the wings, as the feathers will fall back and conceal the cuts.

Another method which you will do well to try out. Place the wing on the table and lift the entire third row of feathers by inserting a long knife blade between the second and third row of feathers, counting from the tips of the long secondary feathers. Holding the feathers back with the left hand, make a cut along the bone of the wing, using a sharp scalpel. Skin back the flap until both bones are exposed. Remove all flesh and muscles. Apply arsenical paste thoroughly. Touch the under feathers lightly with a little flour paste, brush the feathers smooth and the job is done.

After skinning both of the wings as instructed above, cut off the large joints. Do not cut away all of the bone, but just the enlarged parts, as shown by the line "E" in **figure 5**. These joints are only in the way when you come to mounting the skin.

You may find it a little difficult to skin out the wings in this way at first, but after you have performed the work a number of times, it will be very easy and simple.

Next give your attention to the cartilage of the tail, which is sometimes called the "Pope's Nose." Cut away most of the fat and flesh, but do not remove enough to loosen the tail feathers. If you do, you will then have serious trouble. Leave sufficient cartilage so that the feathers are anchored firmly. You should apply the preserving powder very liberally about the base of the tail, as there is more flesh left there than on any other part of the body. If enough preservation is used, you are not going to have any difficulty with the specimens spoiling.

Now go over the whole interior of the skin with a scalpel, seissors, and fat scraper, removing all of the clinging fat and flesh. In many specimens there is a great deal of fat, but on common birds it is not a very big job to get the inside of the skin thoroughly cleaned.

After you have the inside of the skin free from fat and flesh, **give** the whole interior a liberal application of the preserving powder. Rub it in well, using a brush, cloth or wooden paddle. Be sure that all parts are reached. You now have the skinning operations completed.

The feathers must be nicely picked out and the skin arranged in a neat, smooth position. Extend the legs backward and insert a small roll of cotton into the neck, and another roll into the body, so that the sides of the skin will not lie together. After each feather is in its place, wrap the skin in soft paper or sheet cotton and lay it away some place, out of reach of children. It is now **poisoned**, and ready to be mounted. Before putting the skin away, however, you should look it over and see if there are any fresh blood spots, and if so, wash them away with a cloth and warm water. You will have no difficulty in removing them if they are fresh, but if they become dry it takes considerable work. If your first attempt has resulted in a skin fairly free from cuts you can congratulate yourself on the job.

While at first thought it seems a difficult matter to skin a bird and have the skin free from cuts and tears, yet after a few trials you will find that you can do it easily, and that the work requires just a short time. Do not be discouraged if you have the skin torn to pieces on your first effort. I can assure you after you have removed skins from a half dozen or more birds you will be able to take them off perfectly.

Remember that Practice—Practice—Practice is what is required in order to master this art in its details and to become thoroughly competent.

After you have the work completed and the skin laid away you may turn your attention to the original body from which you have removed the skin. Measure its exact length and also diameter in two or three places, using a caliper and tape measure for this purpose. You should also measure the distance around the body at the breast and in the middle and record these measurements for use when you commence to mount the skin. After you have worked on birds for some time you will not need to take these measurements, as you will know from experience just what sizes the bodies should be for the various birds.

LESSON FIVE

Other Points to Be Carefully Observed

Birds with Large Heads

With some specimens such as ducks, flickers, cranes, etc., the skull is so large that the neck skin cannot be easily inverted over it. When skinning these specimens it is necessary to make an additional incision on the throat or the back of the head. We prefer the latter, although many successful Taxidermists use the throat-cut. The incision should be made in the middle of the back of the head, about an inch long in small birds, while in larger birds it must of course be longer.

In skinning the head you should invert the skull through this opening instead of trying to force it through the full length of the neck. Figure 11 shows how the cut should be made in a duck's head. It also

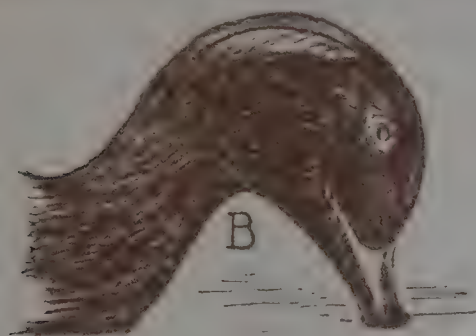


Fig. 11

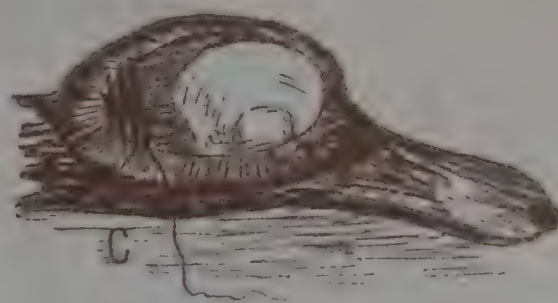


Fig. 12

shows how you can set the bill of the duck in a hole in the table to hold it in position while you are performing the work. After you have skinned out the head, remove the fat and apply the preservative.

You should restore the skull to its original position and sew up the opening immediately. This point is illustrated in figure 12. A number of birds such as wood ducks, hooded mergansers, etc., which have top-knots, should have the incision made lower down on the back of the head, as you should not attempt to cut through the feathers of the head forming the top-knot.

Birds with White Breasts

In skinning birds with white breasts or those having the entire plumage white, you must handle them with much care. If you get the feathers bloody, it is a difficult matter to restore them to their original whiteness. When skinning such specimens you can make the incision

under the wing instead of down the breast if you prefer, yet we think that you will have better results by sticking to the breast cut. After making the incision in the regular way you can separate the skin a short distance on each side of the incision and then sew cloths over the edges to protect the feathers. It is also a good plan to do this when skinning birds that are very fat. It is always easier to prevent the plumage from becoming soiled than to clean it after it becomes greasy or bloody.

Removing Tendons

You should remove the tendons from the feet and legs of all large birds. In birds the size of a quail or pigeon, it is not necessary to open the bottom of the feet nor to remove the tendons between the foot and knee joint, but on all large birds this is absolutely necessary. In order to perform the work properly you should split open the bottom of the foot and bottom of each toe and cut out the tendons from the toes, and then take a pair of pliers and pull out the tendon from the leg. We illustrate how this is done in **figure 13**. It is, of course, necessary to have

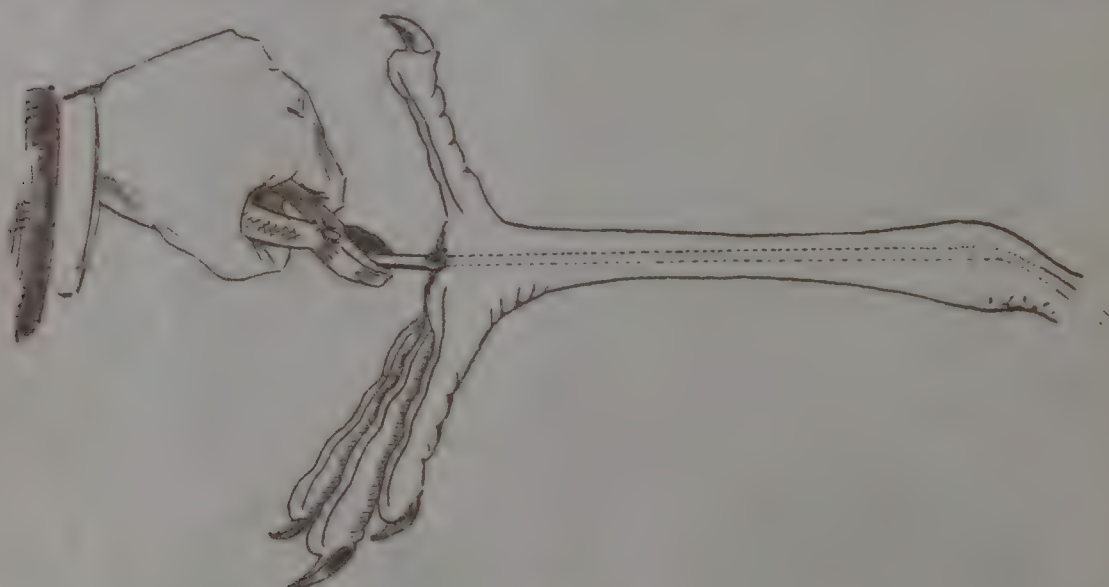


Fig. 13

the lower end of the tendon cut loose and free so that you can get hold of it with a pair of pliers. Some Taxidermists use a hook wire instead of pliers in pulling out the tendons, but the pliers are better if you can grasp the tendons with them.

Removing Fat from Skins

All sea birds are very fat. When skinning them use meal and plaster freely, and protect the feathers in all ways possible, as the fat is hard to remove. If, however, the feathers along the incision become soiled with the fat, they may be cleaned in a satisfactory manner by the use of gasoline, drying the same with applications of plaster. The interior of the skins of these birds is covered with fat which must be thoroughly removed. This is done by applying corn meal freely, and scraping it away with a fat scraper. An old table knife with the edge filed into small notches answers very nicely. In any event be sure to clean the skin well, with many applications of the meal, as otherwise the specimen is hard to preserve, and after several months the fat may work its way through the plumage and discolor it, at the same time inviting ravages from insects.

The Proper Bones to Use

We wish to make it entirely clear to you what bones should be retained when you are mounting birds. The following bones and no others are ever used: The **skull**, all of the **wing bones**, and all of the **leg bones**, **except the thigh bone**, or femur. Examine **figure 10**. You should use the tibia and tarsus, but **not** the femur. When you are skinning a bird, note that the heel is at the first joint above the foot and not at the foot itself. Usually the skinning extends over the tarsus only, except in birds where the feathers grow entirely to the foot. You should then invert the skin as far as the feathers grow. Sometimes the bones of the legs and wings are broken by a shot. In such cases they should be repaired by inserting a wire of the proper size, or a little hardwood stick, into the two ends of the broken bone and winding same firmly with copper wire or small stout twine.

Colors

As soon as the specimen has been secured, note carefully the exact colors of the feet, bill and other exposed parts, as they are apt to fade soon after death and must be restored by the use of paints, as shown in a later lesson. If you are familiar with the use of paints it is a good plan to make the exact colors of these parts on paper, to be used later when you are restoring the colors of your bird. You should also note carefully the exact color of the eyes so that you can select the proper artificial glass ones when you come to set them in the specimens.

There are many little details of this kind that you will become familiar with by actual practice.

Here Are a Few More Points That You Should Carefully Observe

1. It is sometimes necessary to mount birds when they are badly spoiled. If the feathers are slipping seriously you cannot do anything with the specimens, but if they are just a trifle loose apply the preservative and the feathers may soon set and become tight again. If the feathers above the head are a little loose, I would recommend that you split the back of the head whether the skull is large or not, as it does not bring so much strain on the feathers when inverting the skin over the skull. It is also a good plan to dust the head feathers with dry soapstone or talcum powder, as it assists very much when forcing the skull back through the neck skin. You should never put anything of this kind on the feathers unless they are perfectly dry.

2. In skinning owls you are apt to cut great gashes in the ears, unless you are very careful. You should detach the ears of owls deeply in the skull. A little experience will teach you just what we mean, and after you have handled a few you will have no difficulty. Around the eyeball in owls there is a bony structure called the eye cup. This must be left in place to assist in giving expression to the face. After removing the eyeballs you clean the eye cups and eye cavity thoroughly. Or you may take them out and clean them. If you do this you must put them back in place, as they serve a special purpose. In skinning hawks you will find that there are two extra small bones on the skull, just above the eyes. These should be left attached to the skull and not thrown away, as they are needed in giving the face the correct expression.

3. One of the most difficult specimens to mount satisfactorily is the domestic rooster with large comb. The most successful way of handling this specimen is to make a wax cast of the comb and attach it onto the head in place of the natural one. This is not to be undertaken in ordinary work, as it requires much skill and continued practice. If you desire to mount a specimen of this kind, I would recommend that you poison the comb thoroughly by applying corrosive sublimate dissolved in alcohol. After this is done, hold the comb and wattles in position by packing around them wet potter's clay and allowing them to become dry. You can then break the clay away and the comb will retain its position and shape. You will, of course, have to paint it with oil paints to restore the natural colors.

Conclusion

You have now learned how to skin birds properly for mounting. Perform this lesson several times before you attempt number two, as you will need a good sound skin for your first attempt at mounting. This lesson necessarily is of less interest than any other in the course, as it deals simply with skinning. Number two is one of the most interesting. In it you will learn how to mount the specimen. You see the results of your labor and enjoy the process of restoring the now shapeless skin to a beautiful bird, as natural as the living one. In it you get the real art of Taxidermy, and commence to appreciate what this knowledge will mean to you. In conclusion, we feel that we must again warn you against impatience and haste. This lesson is but one of the steps that will be taken in your progress, and as stated above, may be devoid of particular interest to the beginner, yet it is very important, as the results of your mounting depend largely on how well the specimen is skinned. We believe that you will await your second lesson with pleasant anticipation, as it contains much of interest, and completes the first steps of mounting birds. You will need a few additional tools, and we advise you to have in readiness a quantity of wire, assorted in sizes from 10 to 16, a file, pliers, a quantity of tow, excelsior, cotton, and twine string. You will also need a small assortment of artificial glass eyes. These can be secured from any dealer in supplies at a few cents per pair. If the student desires, he can send his order direct to us, though we wish him to feel free to buy where he pleases. Our eyes are of good quality, and are sold cheaper than the usual price. We recommend a small order at first, as you can decide better after a few weeks just what you will need.

Remember that nothing will take the place of actual practice, and that by following our lessons carefully, and making good use of the privilege of asking questions and referring all obscure points to us for additional explanation, you will succeed beyond your most ardent expectations.

LESSONS IN TAXIDERMY



*A Comprehensive Treatise on
Collecting and Preserving all
Subjects of Natural History*

BY

Prof. J. W. ELWOOD, B. S.

BOOK II--Lessons 6 to 10

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LESSON SIX

How to Mount Birds—General Observations

To the Student:

Our first book taught the student how to skin birds. Our second book gives complete information on the mounting of birds.

As in the first book, the detailed operations are set forth in so clear a manner that the students will immediately grasp the method, and after carefully studying the lesson, he sees his way clear to perform each step of the work. He should not only read the lesson, but **study** it industriously. The student should clearly understand at this time that the plan of mounting a bird is, briefly, first, to skin it carefully, and second, to build and insert an artificial body in every way similar to the one removed, and then restore the specimen to its natural shape and attitude. It is at once seen that the mounting is more difficult than the skinning, but at the same time it is immeasurably more interesting and fascinating.

The student must not become alarmed at the prospect, for we assure him that the process is much simpler and easier accomplished than he may suppose. He can do it very nicely after a reasonable amount of practice. You are now interested, so we urge you to just be patient, determined, follow our outlines in every detail, remembering that we have not said one unnecessary thing in this lesson, and the result will be to your entire satisfaction. **STUDY** the whole lesson before you attempt the mounting, and when you do begin the work, be sure that all tools and materials are in readiness.

We now desire to impress upon the student the fact that he must not be satisfied with anything short of the ideal. Too many beginners are prone to neglect those little things that make up the perfection of the art, with the result that their mounted specimens appear crude and "stuffed." You must pay close attention to the form and attitude of the living birds, and know exactly the proportion each curve or extension or contraction or expansion of any particular part bears to the rest of the body. Study natural specimens in their varied attitudes and reproduce them to the best of your ability, then "your bird will seem crafty and just ready to take flight (your sparrow will retain its wonted pertness by means of placing the tail a little elevated and giving a moderate arch to its neck; your vulture will show his sluggish habits by having his body nearly parallel with the earth; your dove will be an artless, fearless, innocent, looking mildly at you, with its neck not too much stretched as if uneasy in its situation) or drawn too close into its shoulders, like one wishing to avoid discovery."

Read extensively on bird life, and spend many hours in the woods and fields critically observing the natural positions and attitudes of the living creatures. Carry the impressions home with you and reproduce them in your specimen, as the artist does on his canvas.

LESSON SEVEN

Tools and Materials

In addition to the tools and materials named in the preceding lesson, the student will need the articles mentioned below, and can nicely use all the tools usually found in a carpenter's chest, especially when it comes to making perches or stands for the mounts.

- | | |
|--------------------------------|----------------------------------|
| 1 pair flat-nosed pliers. ✓ | 1 brace and variety of drills. ✓ |
| 1 pair calipers. | Assorted needles and thread. |
| Saw, hammer, plane. ✓ | Several files. ✓ |
| Sandpaper. | Assortment short hat pins. |
| Tube paints and brushes. | Potter's clay. |
| Excelsior (can be procured at | Tow. |
| furniture stores). | Cotton. |
| Ball common twine. | Artificial eyes. |
| Ball soft twine. | Paper of pins. |
| Perches and mounting boards. ✓ | |

Wire List

The following gauges of wire are best adapted for the birds named and those of similar sizes, although it may be varied somewhat if the sizes named are not available. Any good malleable wire may be used, but it is best to secure galvanized **annealed wire** from some dealer in supplies:

No. 19-20, swallow, sparrow, snowbird, bluebird, small sandpiper.

No. 16-18, quail, robin, blackbird, killdeer, doves, kingfisher, plover, jack-snipe, woodpecker.

No. 14-15, teal, crow, small hawks, gulls, prairie chicken, grouse.

No. 12-13, loons, wood ducks, barred owl, mallard, pigeon-hawk, etc.

No. 10-12, horned and snowy owls, large hawks, hawk owl, raven, turkey.

No. 8-10, sage cock, spoonbill, goose, bald and golden eagles, great blue heron, buzzard.

No. 6-8, pelican, crane, swan, vulture, etc.

The larger the number the smaller the wire. Example: No. 16 is smaller than No. 14.

With this list as a guide it is an easy matter to determine what size to use with any specimen.

Artificial Eyes

The Taxidermist must constantly have on hand a collection of eyes, much varied as to size and color. These eyes can be obtained from any dealer in Taxidermists' supplies at a small cost. Any color or shade may be had, and nothing is of more importance than selecting the proper size and tint for the specimen. We give below a brief outline of the sizes used by us which will be representative to the student in his selections. The color must, of course, be determined by a careful inspection of the natural eyes of the specimen.

1-2, humming bird.

2-4, snowbird, sparrow, canary, chickadee.

4-7, blackbird, jay, robin, thrush, least bittern, sandpiper.

7-9, prairie chicken, quail, grouse, teal, kingfisher.

- 9-12. hawk, owl, goose, brant, grebe, chicken hawk, duck.
12-15. screech owl, great blue heron, bald eagle.
16-19. golden eagle, barred owl, snowy owl, pelican.
20-23. rhea, ostrich, etc.

LESSON EIGHT

Making the Artificial Body.

The student has been instructed to practice Book One several times, in order to familiarize himself with the work, and also that he may be able to prepare a good sound skin for his first attempt at mounting. We shall now ask him to procure another specimen, a pigeon preferred, and to prepare it exactly as set forth in Book One.

The skins that you already have are more or less dried and hardened and must not be attempted by the beginner. Dry skins can be nicely mounted, but at the best it is a difficult task and not to be tried by the amateur. We shall, however, give you, in another lesson, an approved method of doing this kind of work, by which you will get very satisfactory results.

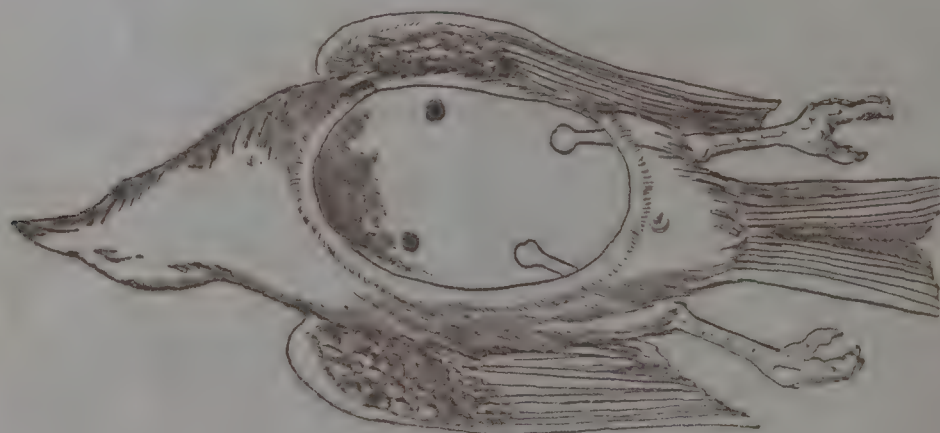


Fig. 14

It is assumed that you have skinned the specimen and have the skin in good condition for mounting. It will appear like figure 14. You have before you the natural body, figure 15, from which you are to take your measurements in order to secure the correct shape of the artificial body which you are now going to make. I wish to impress upon the student at this time the necessity of making the artificial body **exactly right** in



Fig. 15

both **size** and **shape**, for it is a fact that almost every mounted bird that looks crude and unnatural has been made so by an artificial body full of mistakes and errors.

It is not a difficult matter to make these bodies **right**, after you have mounted a number of specimens, but to start with you are apt to make

some serious mistakes, and for this reason we urge you to read this lesson with much care and to construct the artificial body as near the general shape of the natural one as possible.

The Wires Required

Before starting to make the body you should prepare the necessary wires. For a specimen such as a robin or quail you should use No. 16 or 17 galvanized annealed wire. Prepare the wires about the following lengths:

One 16 inches.

Two 10 inches.

One 6 inches.

Be sure that they are very straight, without any bends and kinks. File one end of each to a very sharp point and they are then ready for use. The longest wire is for the body and the neck and the two ten-inch wires are for the legs. The six-inch wire is used for supporting the tail. No other wires are required, unless the bird is to be mounted with spread wings, which subject is fully discussed in Lesson No. 9.

Constructing the Body

The artificial bodies for birds are made from excelsior, wound with stout linen string. Take in your hand a small bunch of excelsior, twist and squeeze it until it is quite firm and solid. Make it into the general shape of an egg, a little larger at one end than at the other. Now take linen thread and start winding this excelsior. Wind it down tightly, at the same time continuing to shape up the artificial body until it looks something like the natural one in general shape. Now add a little excelsior here and a little there, winding it firmly into place, and continuing in this way until you have constructed a firm, hard artificial body that is of the same size as the natural body. Use plenty of string and wind it tightly. Do not make the body too large. When done it will look like figure 16 (without the neck).

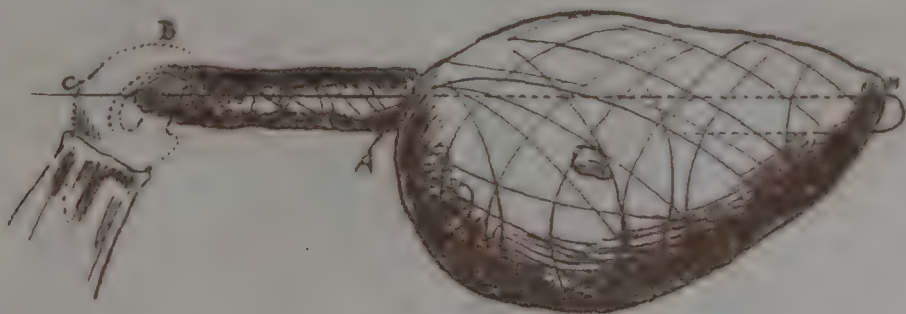


Fig. 16

It is best to have the body a little too small than too large, although it should, of course, be exactly right. Experience alone will enable you to handle this point successfully. By measuring with the hands, calipers, and tape line, you will not have much difficulty after a few trials in getting the correct size and shape.

A side and end view of a body suitable for a bird is shown in figures 17 and 18. Note that it is not exactly round and is narrower at the back than at the breast. The sides should be slightly flat.

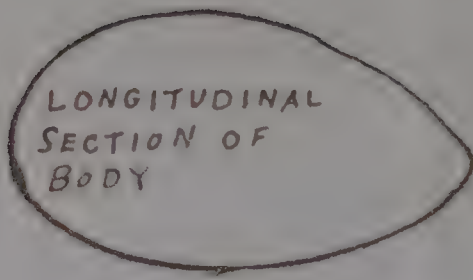


Fig. 17

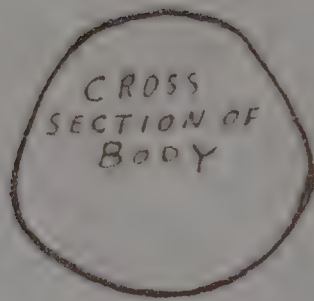


Fig. 18

Making the Neck

Now take the longest wire and insert it into the artificial body at "A," figure 16, and pass it through the full length of the body until it comes out at the point "H." Push it through several inches and then bend the end into a hook, which is drawn back into the body, thus firmly anchoring the wire as shown by the dotted line in figure 16.

You may now wind the neck on the wire which is protruding from the front part of the body. Use tow for this purpose, as excelsior is too coarse. Wrap the neck-wire with the tow and then wind it firmly with linen thread until you get the neck the real size and length. The neck should be smaller at the outer end so that it will fit into the skull cavity when mounting the bird.

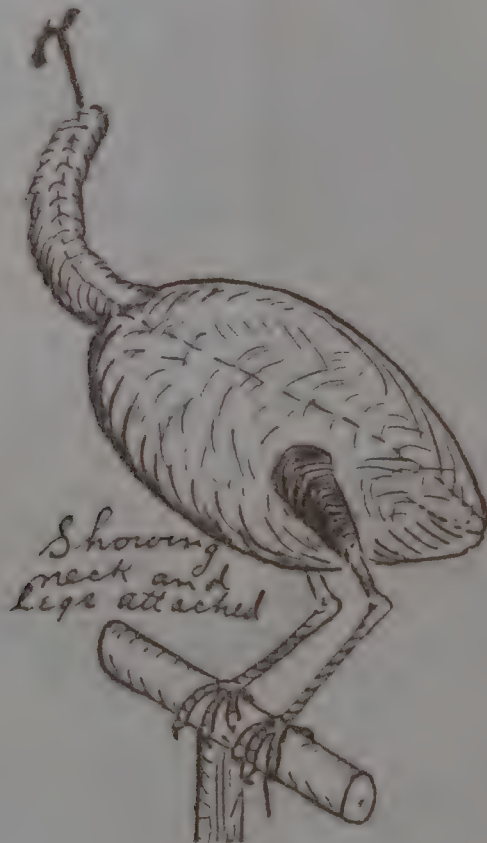


Fig. 19

Do not attach the neck too high on the artificial body. Figure 19 shows a complete body as it would appear in a bird after mounting. It illustrates clearly just where the neck should be attached and the general shape of the neck after the specimen is completed.

Introducing the Leg Wires

Take one of the ten-inch wires. After sharpening it, coat it over well with arsenical paste or the dry preserving powder mixed with enough water to make a paste. Introduce it into the sole of the foot and work it along the bones, under the skin, until it is brought out at the heel "A," as shown in **figure 20**. Draw it back and forth several times, adding fresh poison each time to get it thoroughly distributed through the passage.



Fig. 20



Fig. 21

Now tie the wire and bones loosely together. You must now replace the muscles which have been removed from the leg bones, by winding **tow** around the bones and wire. Wind it firmly with linen thread until you have the muscles of the leg of natural size. **Figure 21** illustrates

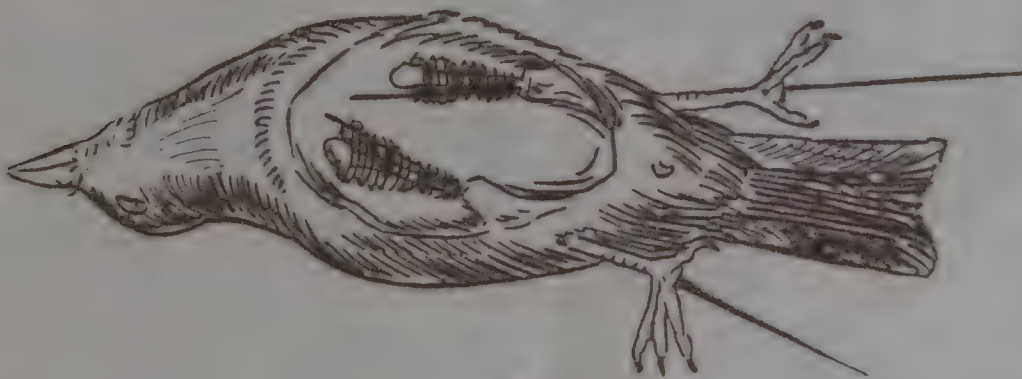


Fig. 22

this point clearly. Do not make the legs **too large**. Now repeat the operation on the other leg, and after this is done the skin will appear like **figure 22**.

Placing the Artificial Body in the Skin

Oil the neck wire and pass it through the neck skin into the brain cavity and out through the front part of the head. Push the body firmly into place and force the end of the artificial neck into the opening which you have made at the base of the skull. See **figures 16 and 23**.

When mounting birds with long necks you can place a cork on the tip of a sharpened wire to keep it from sticking into the skin. When you do this, push the cork through the mouth and remove same. You can then force the wire out through the front of the skull. The body is now enclosed in the skin and you are ready to attach the leg wires to the artificial body.

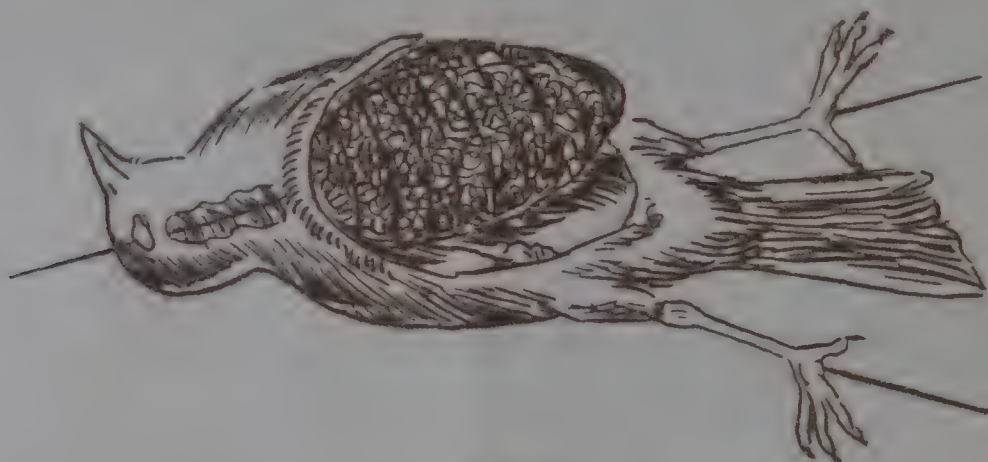


Fig. 23

Attaching the Leg Wires

This is a very important matter and the success of your work depends largely on how well it is done. The legs must be attached at exactly the right places or the specimen will not present a natural appearance. Experience will help you in this part of the work.

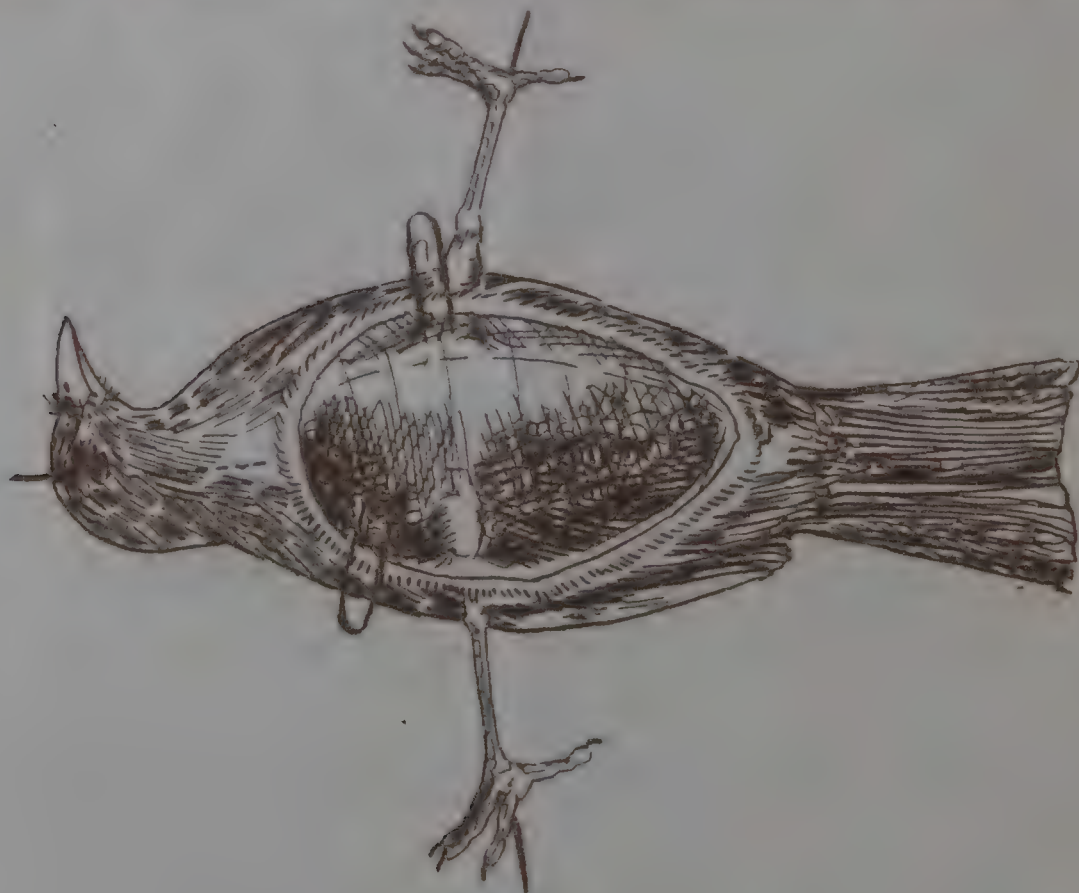


Fig. 24

In common birds, such as the students will use at first, the proper place to attach the legs for a plain standing position is shown in **figure 19**, but this point varies, depending on the position in which the specimen is mounted.

After selecting the point to attach the legs, pass the sharpened end of the leg wire into the artificial body, and force it through the body until it comes out on the opposite side. Bend it into a sharp hook with a long point, then pull the wire back until this point is firmly anchored in the artificial body. **Figure 24** shows how this is done. Repeat the operation with the other leg. While doing this, it will, of course, be necessary to slide the leg back and forth on the wire. After you have the leg wires securely anchored in the artificial body, push the legs upward on the wires until the upper ends of the legs are **firmly** against the artificial body.

Sewing Up the Incision

After drawing the legs together as shown in **figure 25**, pull the skin together and see that it fits well. It must not be drawn very tight, but should come together evenly. Examine the specimen and see if you can detect any place on the body that needs building out, and if so, insert

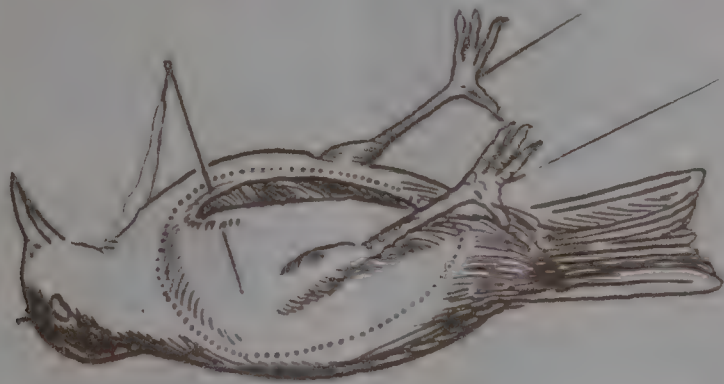


Fig. 25

a little loose tow with a pair of tweezers. It may be necessary to put in a quantity of tow around the base of the tail and around the upper ends of the legs. When this is done, you are ready to sew up the breast incision, which is done by simply stitching the edges together, starting at the point of the breast as shown in **figure 25**. You may use an ordinary sewing needle, but it is best to have a **surgeon's needle** slightly curved, using common heavy thread, or linen thread, for sewing the incision. It should be sewed up the full length.

Now lift the feathers on the sides of the incision and let them fall back into position, covering up the seam entirely. You may have to work on this some little time. After it is completed you should not be able to see where the incision was made. When sewing be sure that the thread does not warp around the feathers, as it will cause them to stick out and present a rough appearance. You are now ready to put the bird on a temporary perch. For this purpose you can use an ordinary "T" stand. Drill holes the right distance apart to receive the leg wires which are protruding from the bottom of the feet and insert these wires in the holes, drawing the feet in firm contact with the base. Clinch the wires or wind them about the perch, as shown in **figure 28**.

Setting the Wings

This is a very important part of the work. The wings must set just where they were on the live bird. If too far forward or backward, or too high or too low, an unnatural effect is produced, so it is advisable that the placing of the wings receive special attention. Small birds may be mounted without wiring the wings, but we recommend the wiring of

the wings when mounting medium and large birds, as this method has its advantages. One end of the wire should be passed along the bones of the wings until you reach the tip of the wings. The other end of the wire should be sharpened and passed through the artificial body at the proper place, bent into a hook, and drawn firmly back into the body. The point at which the wing wires enter the body should be so selected that the upper wing feathers of both wings come quite close together on the back, as you will note they do on the live birds. To get this result the wing wires must enter quite close to the top of the body. If you do not get the wings set right the first time, select another point for inserting the wing wires. With a little practice you will have no further trouble.

In the final adjusting of the wings, the wire should be bent to the proper shape and cut off at the wing tip, where it should rest in the cartilage.

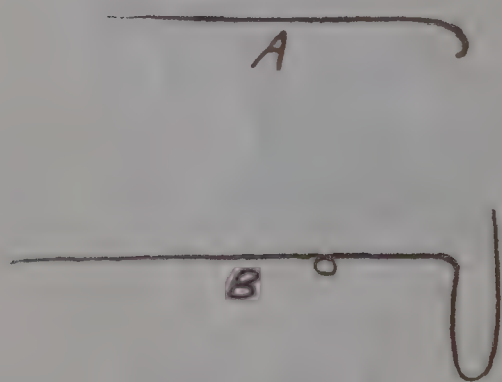


Fig. 26

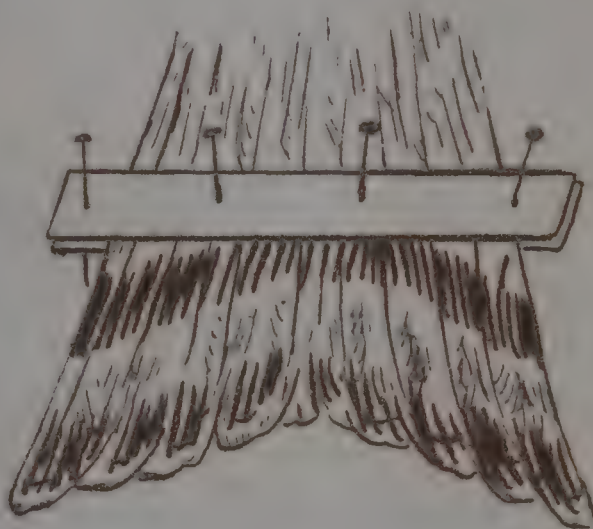


Fig. 27

The wings of small birds may best be held in place with pins of suitable length. Force the pins into the body until the outer ends can be buried in the feathers. Use two pins and insert where they will best support. Unless the artificial body has been made **firm** and **solid**, the pins will not stay where put, so we again caution about preparing the body to have it the same in shape as the natural, and **hard** and **firm** when finished.

Shaping the Bird

It now requires an artistic eye and much patience to arrange the bird in a natural attitude. This is where you can show your true ability and your knowledge of birds. You must now do the **finishing**, which is a very important thing, and means the forming of the bird into a life-like pose, having the feathers all lie smoothly in their proper places.

Bend the leg wires at the knee joints and also at the feet and the body joints until you have them in the natural shape. Now bend the neck wire into a proper curve. Stand back from your bird occasionally and look it over and try to improve its appearance. Continue to do this until you are satisfied that it is in a natural position that it might assume while living. You cannot give too much time or attention to this part of the work and it is really interesting to develop an unshapely specimen into one of beauty and symmetry.

You should now prepare a support for the tail. Select a wire of suitable size and length, bend it into the form of a letter "T" at one end, then bend a small loop in it as shown at "B" in figure 26. The loop will prevent its going too far. Sharpen the other end, pass it through the cartilage of the tail and out at the breast, bend the sharpened end into a hook and draw it back into the artificial body to give it good anchorage. This will form a permanent support for the tail feathers.



Fig. 28

Now take two card boards and pin them above and below the tail feathers, as shown in figures 27, 28 and 30A. Be sure that each feather lies in its place so that the tail will appear natural when the specimen is dry. At this point it is well to say that you must do all of this arranging before the specimen dries, for afterwards it is impossible to change the position of a single feather.

Setting the Eyes

You may either set the eyes while the specimen is fresh or wait until it becomes dry. We prefer to set the eyes just as soon as a bird is mounted and while the eyelids are still soft. If you do not have the proper glass eyes handy and have to send for them, you can put them in satisfactorily at any time later. In order to do this, however, you will have to pack in and around the eyelids with wet paper or wet cotton for a few hours until the lids are perfectly soft again. Cut the wires from a pair of suitable glass eyes and insert them into the cavities with the assistance of a darning needle or a pair of needle-pointed tweezers. The eye cavities of small birds are filled with tow or clay and by working

carefully you can soon set the eyes in properly. If necessary put in a little extra tow or clay or remove some so that the eyes will go in the right depth. The glass eyes should be set entirely beneath the eyelids, bringing the lids over the edges of the glass in a natural shape. It is a good plan to put a drop of liquid glue into the eye cavities before the eyes are set. If, however, you have a supply of potter's clay, we think you will have better success by filling the eye cavities with this than by attempting to use the tow. If the eyelids should become slightly dry while you are working on them, dampen them with a wet sponge, for they must be perfectly soft if you are to give them the right shape.



Fig. 29

Filling the Throat

The throat must now be restored to its proper size and dimensions. This is done by passing a small quantity of cotton through the mouth with a stuffing stick or a pair of forceps. Fill cotton into the throat loosely and press it into position from the outside, with the fingers, until the throat has the proper size and the feathers lie smoothly.

After this is done to your satisfaction the beak must be placed and held in position until dry. For this purpose a pin can be passed through the lower mandible, into the upper one, as illustrated in **figure 28**, or you can tie a string around the beak and allow it to remain until the specimen is thoroughly dry.

Winding the Specimens

The plumage should now be wound with soft string to hold it in position until the specimen becomes dry. Some Taxidermists wind string around a bird as shown in **figure 28**. It is a little difficult, however, to get string just right. If it is drawn too tight it will show the creases after the string is removed, yet if you use care and wind it very loosely, this method is satisfactory.

Others recommend winding as shown in **figure 29**. When winding a bird in this way several wires are bent like **figure 29A**. One end is sharpened and the other end is bent into a hook. These wires are inserted along the back and belly of the bird, and the winding done as shown

in the illustration. Wind carefully so that all obstinate feathers are drawn into place.



Fig. 30A

You can use either of the above methods for winding, but in all ordinary cases, we think it is far better to simply pin papers on the specimens as shown in **figure 30A**. These papers will hold the feathers snugly in position and will not crease the bird in any way. You may also use a combination of the two methods. A little practice will enable you to judge which method you prefer.

After winding the specimen it should be set away until thoroughly dry. This requires a week or two and sometimes longer in damp climates. Do not attempt to remove the wire or string until you are sure the specimen is thoroughly cured.

Restoring Colors

When the specimen becomes dry, it is then necessary to restore the colors of the feet and beak, which have no doubt faded by this time. For this purpose you should use ordinary oil paints from tubes. A little practice will enable you to mix the paints so that you can get the desired colors, for you have, of course, noted the natural colors when you first secured the specimen. In a little while you will be so familiar with all the common birds that you will be able to remember the exact colors of both the feet and beak. Some Taxidermists simply varnish the legs, feet and beak and let it go at that, but for the best work we recommend the paints.

After the specimen has become dry, you can then remove the thread, or papers, with which it is wound, take away the card board from the tail, and pull out the wire that supported the tail, or better cut it off

Leg wires that come out at the bottom of the feet should be drawn down through holes in the base on which the specimen is mounted, and bent into grooves previously prepared to receive them. Draw the wires good and tight to insure a firm stand, otherwise the mounted specimen might be loose and wobbly.

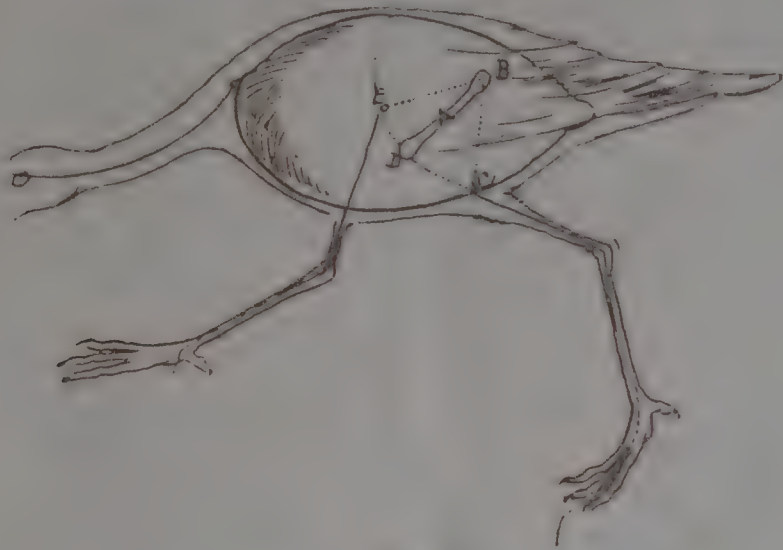


Fig. 31

LESSON NINE

Mounting With Spread Wings



Fig. 32

Mounting birds with **spread wings** is not a particularly difficult task, but it is best for the beginner not to undertake it until he has practiced a number of times on mounting birds with closed wings, so that he will be familiar with the details of the general work. When you mount a bird with spread wings it is necessary to use two extra wires that are not used in mounting with wings closed. The wings should be skinned in just the same way as for mounting with wings closed. **Figure 32** shows the incisions that are made when skinning wings, and also the

position of the wing-wires. You will remember that the large joint next to the body is cut off as shown in **figure 32**.

The wire should be passed along the bones of the wings and bent slightly at the joints as shown in the figure. You shall tie the wire to the bones at "A," "B," "C" and "D," by using small brass wire. The outer end of the wire "E" should extend some distance and be left until you are ready to finish the specimen. After you have wires inserted in the wings, select the proper place where they must be attached to the artificial body, and pass the sharpened ends of the wires entirely through the body and bend into a hook, which is pulled firmly into the excelsior in just the same way that you anchor the leg-wires. Use wire about the same size as you do for the legs. Be sure that these wires are plenty long. Study **figure 33**, which gives you a clear idea of how the wires

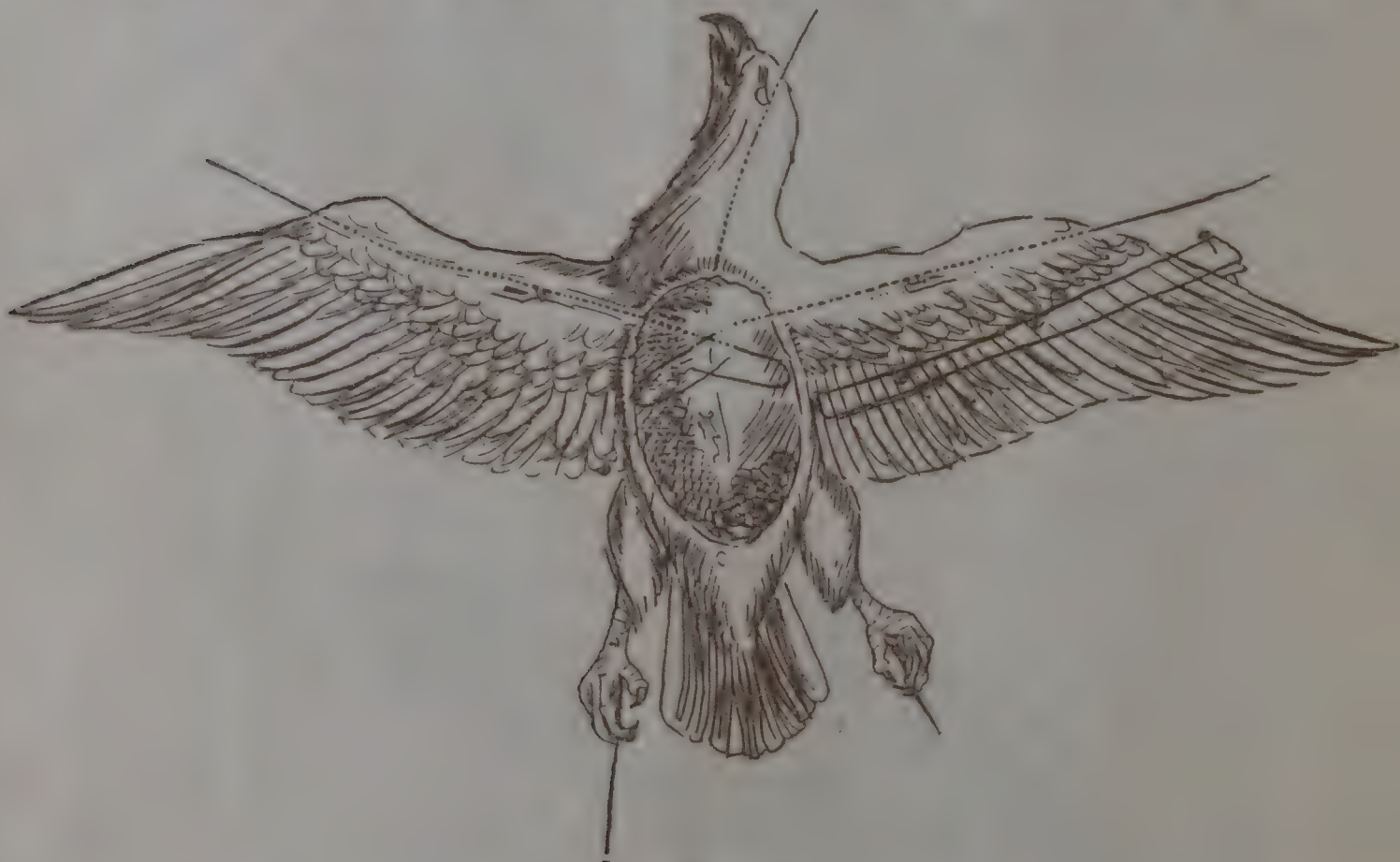


Fig. 33

are inserted and attached to the body. These wires should be inserted before the incision is sewed up.

When shaping up the bird you first place it on an artificial stand and proceed just the same as you do with birds with closed wings, until you come to the arrangements of the wings, when they must be raised up and bent into a perfect natural position. There are a great many varieties and styles of positions that you can use and all of them will be correct, so you must use your own taste and judgment in the matter. After the wings are in the desired place, prepare a temporary wire "B," **figure 34**. This should be sharpened at the lower end and bent into a hook as shown, and the sharp end pushed into the body through the hide. The upper end should be twisted to the protruding wire "A" to point "C." This wire is to assist in holding the wings up until dry, and should be arranged so that the feathers will lie smoothly on the wire to keep them in position. You should then pin strips of card board above and below

the wings as shown in **figure 34**, using very large pins. This card board keeps the feathers in their proper places until the specimen is dry. When you are finishing the bird you should remove the card board and also the wire "B." Cut off wire "A" close to the feathers. If necessary, you can pin several sets of card boards on various parts of the wings so that the feathers will be held in the desired positions. After they are thoroughly dry there is no danger of them losing this position.

Many fancy and attractive attitudes may be made by spreading the wings, after you get well into the work. You will thoroughly enjoy this part of it. Some birds do not look well with spread wings, while others are much more attractive when mounted in this way. Among those that mount well with spread wings are the owls, hawks, eagles, gulls, etc.



Fig. 34

Mounting Colossal Birds

Such birds as the ostrich should have a board arranged like **figure 35**. The neck and leg rods are made from iron and are attached to the center board through the block. A manikin is then built from excelsior and after that is completed it should be covered entirely with potter's clay. The student is not apt to have to use this method at any time, as these large specimens are very rare and few Taxidermists have an opportunity to try their luck on them. By studying the lessons on mounting animals, you will clearly understand how to make the manikin in case you should be fortunate enough to secure one of these large birds.



Fig. 35

LESSON TEN

Further Important Information and Notes

(1) It is a good plan to make a solution of corrosive sublimate by dissolving $\frac{1}{2}$ oz. of it in 4 oz. of either grain or wood alcohol (very poisonous) and with a soft brush go over the beak, feet and feathers, very lightly. This keeps away all insects.

(2) Potter's clay may be procured from any dealer, and has an important part in Taxidermy. Clay secured from a well or the bottom of a cellar will sometimes answer the purpose and save expense.

The clay should be mixed with water and worked into a smooth mass of the consistency of putty. An addition of chopped tow or excelsior adds much to the value of the clay for moulding the muscles of the head. Glue may be used sparingly. On birds larger than the pigeon, grouse and crow, the flesh removed from the skull must be entirely replaced with clay.

(3) To relax dried skins, wrap the feet and head in wet cloths, and fill the skin with rolls of the same. It will require a day or two to make the skin pliable and ready to mount. Beginners should avoid dried skins.

(4) Do not attempt any fancy attitudes or spread wings at first. A simple standing position for birds will give the most satisfactory results. After you have acquired some skill in the art, then there are a multitude of standing, walking and flying positions that can be used and with most pleasing effects.

(5) The "T" perches are recommended to the beginner. They are made by boring a hole in the center of a circular board and inserting an upright stick, across which another is screwed or mortised, after which they are nicely painted or varnished.

(6) Under no circumstances disturb the specimen until dry (unless to improve the attitude), when it may be handled with no fear of injury.

(7) The toes must be spread into position and held in place with pins until they are dry. This is especially true with birds having web feet.

(8) In mounting pelicans, particular attention must be given to web or pouch. Clean it thoroughly, both inside and out, and apply the preservative liberally. It is also well to give the interior an application of corrosive sublimate. After the specimen is mounted, open the mouth and pass a wire along the lower interior edge of the web, continuing the wire into the artificial body. The outer end should be placed firmly in the front part of the lower mandible. The wire should be given a slight

curve downward and held in this position by a small wire attached to the same and to the stand on which the specimen is placed. This will, of course, be removed later. Many persons fill this web with sheet-lead, tin-foil, or something of the kind, which gives it a stuffed and unnatural appearance, and should always be avoided. In mounting pelicans you can run the neck-wire down the inside of the upper mandible instead of through the head, as the upper mandible is hollow. The inner lining of the pouch can be removed, which will cause the specimen to dry much more rapidly, but it is not absolutely necessary.

(9) It is sometimes desirable to mount birds such as hawks and owls with open mouths, and when this is done, it is necessary to carve out a tongue from soft pine wood. It is set in the mouth of the specimen in the bed of wet papier-mache and after the mouth is thoroughly dry, it should be painted the natural red color. The tongue should be covered with a coat of wax and also painted the same color as the natural mouth.

(10) The naked heads of vultures must be carefully handled and painted to the exact color of nature.

(11) For many specimens nothing makes better stands, or more appropriate, than natural limbs and stumps. A good saw and an hour in the woods will provide you with a collection of limbs, knots and stumps that will save you many hours of hard work, and be as good or better than the manufactured perches and mounting boards.

(12) Specimens, when properly mounted for the purpose, may be suspended from the ceiling with splendid effects. If you desire to so arrange them, it is necessary to pass a small wire upward through the artificial body before the incision is sewed. This wire should protende through the skin between the wings on the back, and be anchored in the breast. A small copper wire may be attached to this wire and used for suspending the specimen.

Conclusion of Book Two

Read this lesson several times before you commence the practical work. Be sure that you give heed to each and every sentence, for one purpose always kept in view in preparing these lessons is to make them as brief as possible and yet clear on all points. As stated before, you should not attempt skins that have become dry. Be prepared to mount the specimen as soon as the skin is removed. Do not expect a masterpiece at first. A few hours' work each week will soon enable you to produce specimens that will be good in every respect. Do not make the mistake of postponing the work until you have received several lessons. Perform them as they reach you. If your time does not permit, notify us and we shall send the lessons just as you can use them. Remember it is important that we be kept fully advised of your progress. Write us after each lesson has been performed, explaining your difficulties, telling us in what you succeed and in what you fail; ask all the questions that you desire, and in general make use of the school as you would a personal teacher. We are interested in your success and shall spare no time or labor to assist you in every way possible.

The next lesson introduces you to the art as applied to small mammals. Before receiving this lesson, perform one and two as frequently as possible, ever remembering that "practice makes perfect" in Taxidermy as in all other arts and sciences. And don't forget that we want to hear from you if you get into difficulty.

(If you have not received our supply catalogue it will be mailed free on request.)

Suggestions for Positions



Golden Eagle



Goshawk and Weasel

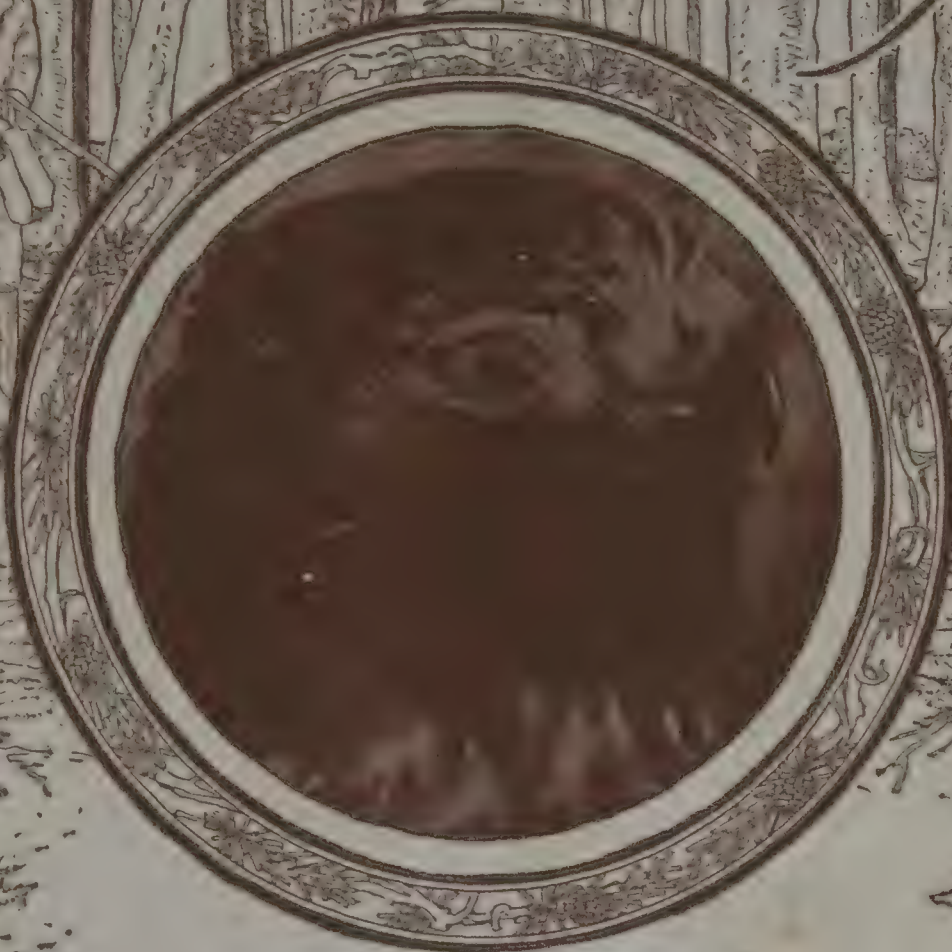


Bald Eagle



Snowy Owl

LESSONS IN TAXIDERMY



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Collecting and Preserving all
Subjects of Natural History*

BY

Prof. J. W. ELWOOD, B. S.

BOOK III---Lessons 11 to 13

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LESSON ELEVEN

SMALL ANIMALS

General Observations

Much that was said in Book One regarding the skinning of birds will apply just as well to skinning mammals, hence we advise the student to read that lesson again. It is impossible in a brief and concise treatise, such as we attempt to give, to take up the many various animals and their anatomical differences, in detail, but we do present a few typical forms and handle them in such a manner that your observation will tell you what to do in special cases, as you proceed with the actual work.

By the term "small animals" we intend to include everything up to the size of a wolf, beaver, fox, etc., and many animals much larger can be treated in exactly the same manner, whether in skinning or mounting.

So many students are inclined to become discouraged when a difficulty presents itself that we venture to say again—**keep up your courage.** If you do not succeed in your first attempt, find out why and **energetically** try again. We want you to be a thorough Taxidermist and know that you will if you exhibit a determination and persistency.

"If you strike a thorn or rose,
Keep a-goin'!
If it hails or if it snows,
Keep a-goin'!
'Taint no use to sit and whine,
When the fish ain't on your line,
Bait your hook and keep on tryin'—
Keep a-goin'!"

Tools and Material

Provide all the tools already mentioned, and in addition, a good skin-scraper, bone-saw, hand-vise, chisel, awl, small hook and chain, a pail or two, a heavy pair of cutting pliers, and a furrier's comb. There is hardly an end to the tools that may be purchased for the Taxidermist's use, and we would now advise you to send to some reliable dealer for a catalogue of supplies, and to provide yourself with a first-class outfit. This is not absolutely necessary, however, for some of the best work that I have ever seen was produced with the most crude and ordinary kinds of implements.

Wire List

Select wires of about the following gauges for specimens named and all others of equal sizes:

- 16-18, gopher, timber squirrel, rat.
- 13-15, prairie dog, muskrat, mink, etc.
- 11-12, cottontail, skunk, cat, hare, etc.
- 9-10, fox, badger, beaver, wild cat.
- 7- 8, coyote, otter, wolverine.
- 4- 6, wild cat, lynx, dog.

One-fourth inch round rods, gray wolf, setter dog, kangaroo, cougar.

Experience will soon teach the student to make his selections judiciously. Our only suggestion is—don't use a wire or rod that is too small or your animal will be weak and "wobbly."

Artificial Eyes

Guide to Students:

Size: For:

2, mouse.

5- 6, striped squirrel, woodchuck.

7- 8, skunk, red squirrel, prairie dog.

8- 9, grey squirrel, prairie dog.

9-10, fox squirrel, pocket-gopher, etc.

11-12, coon, skunk.

13-14, cottontail, otter.

15-16, badger, beaver, small fox.

17-18, black and grizzly bears, wildcat, lynx, coyote, fox, jackrabbit.

19-20, cougar, jaguar, lynx.

20-24, lion, tiger, deer, mountain sheep.

25-27, horse, elk, cow, caribou, deer.

(See our supply catalogue for further information.)

General Suggestions

It is assumed throughout the lesson that the student intends to skin and mount his specimen while it is still fresh, as a dried skin is too difficult for him to try at present.

As soon as the animal has been killed, cleanse the hair or fur of all blood stains at once, never allowing it to become dry or hardened. Comb or brush the hair nicely and keep the specimen in the best of condition until the work-room is reached. If the collector be far from home, or the animal is large, it becomes necessary to do the skinning in the field. When this is done, proceed as instructed in this lesson.

Unless the mounting is to be done within a few hours, it will be necessary to preserve the skin by some means, especially in hot climates. There are several methods of preserving animal skins for future mounting. Some prefer to keep the skins in a pickle-bath, and others to preserve them dry. If it is not necessary to transport the skins any great distance before reaching home, we think it best to use the pickle-bath, which is described in another lesson. Study this subject carefully so that you will know how to make the bath without reference to the lessons, for you may be called on to use the bath when the printed matter is not available.

For ordinary purposes we recommend that the skins of such animals as squirrels, foxes, bob cats, coyotes, etc., be preserved with **common salt**. The skulls must be removed entirely from the skin, and **all flesh scraped away**. Be sure to skin out the **tails, ears and feet** (it is not possible to skin the ears of such specimens as the squirrel and rabbit), then apply salt in **large quantities** over the entire flesh side of the skins.

Stretch the skins flesh side up in a dry, cool place (not in the sun), and allow them to remain until they become hard and dry. Apply salt frequently if necessary. The skins will keep well in this condition unless attacked by insects, which is apt to happen in the summer, unless care is taken. You understand that skins are allowed to dry only when the mounting is to be **postponed for some time**. If mounting is to be done at once, be sure and keep the skins damp and fresh, for a dried skin must be **relaxed before mounting**.

If skins are to be kept for several weeks or months during warm weather, we would recommend the **pickle-bath** (which is described in a

later lesson), as this preserves them and protects them against the possibility of attacks by moths, beetles, etc.

Never wrap a fresh skin up tightly, nor allow any part, such as head, feet, tail, to remain unskinned, for decomposition is sure to set in and the hair will slip from these parts. Then the skin is practically ruined for mounting.

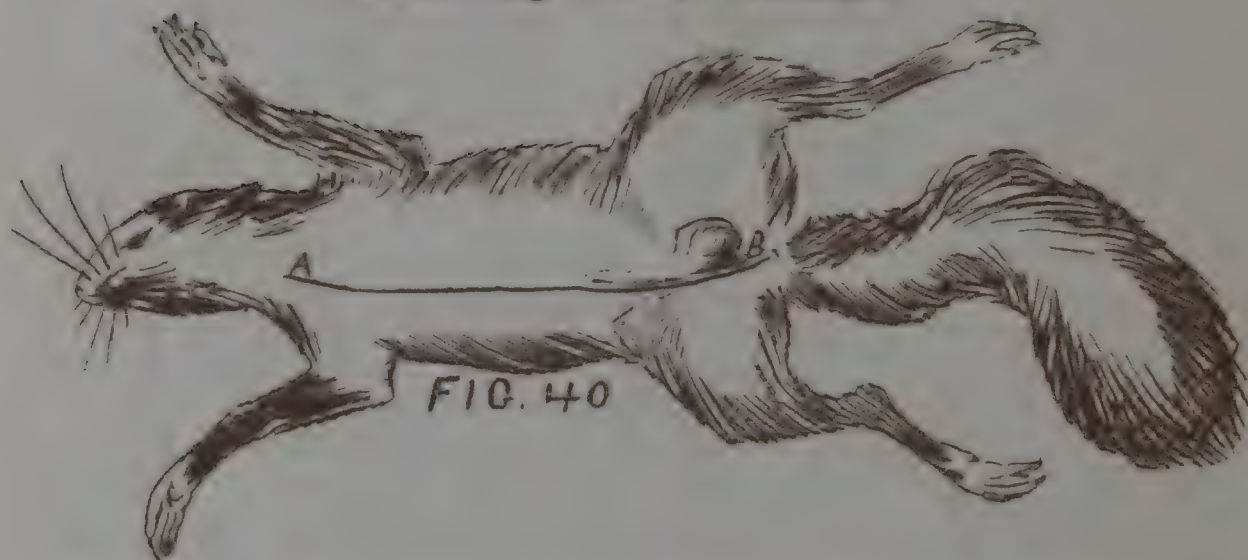
The experience that the student has already had in skinning birds will assist him materially with the present lesson. The operations are very much the same.

One of the most widely distributed specimens in this country is the squirrel, and on account of its availability we shall use it for a study in the present lesson. If impossible to secure one, the student may select any animal of similar size, but we would recommend nothing smaller. In the absence of other specimens an ordinary house cat will answer our purpose very nicely, though it is difficult to mount properly. It may be killed with chloroform.

Have all the tools and materials prepared and in a handy place before you begin the work.

LESSON TWELVE

Skinning Small Animals



After you have everything in readiness and after the specimen has been dead long enough for the blood to set, you may then start to work.

Lay the squirrel on the table and make an incision down the center of the breast from A to B, as shown in **figure 40**. This is the **only cut** that is made when skinning small quadrupeds. Separate the skin from the body along one side of the incision. It will be necessary to use the scalpel and scissors occasionally to cut the tissue connecting the skin to the flesh. Skin down the side until you come to the attachment of the hind leg, then push the leg out through the skin like **figure 41**, and cut off the leg at joint "A," **figure 41**.

Now skin the other side and detach the leg in the same manner. You can now invert the leg skin and remove the flesh, leaving the bone exposed like "B," **figure 41**. Continue to skin the body until you have the skin separated well down onto the tail, **figure 41**. At this time you should skin the tail, which operation is performed by pulling the bone out from the tail skin. Sometimes it is necessary to invert the tail skin

about half the length, being careful not to pull off the end of the tail. Some Taxidermists recommend that the tail be split open on the under side, but it is not necessary on these small animals. You will get better results by simply **pulling it out as stated above.**

After the tail and hind legs have been skinned and detached, you may continue the skinning until the front legs are reached. Detach the front legs at the body and continue the skinning of the specimen over the head just as you did when skinning the birds. Be careful that you do not cut through the skin about the ears, eyes and nose. **Remove the skin entirely from the skull.** The natural body will then appear like figure 42.

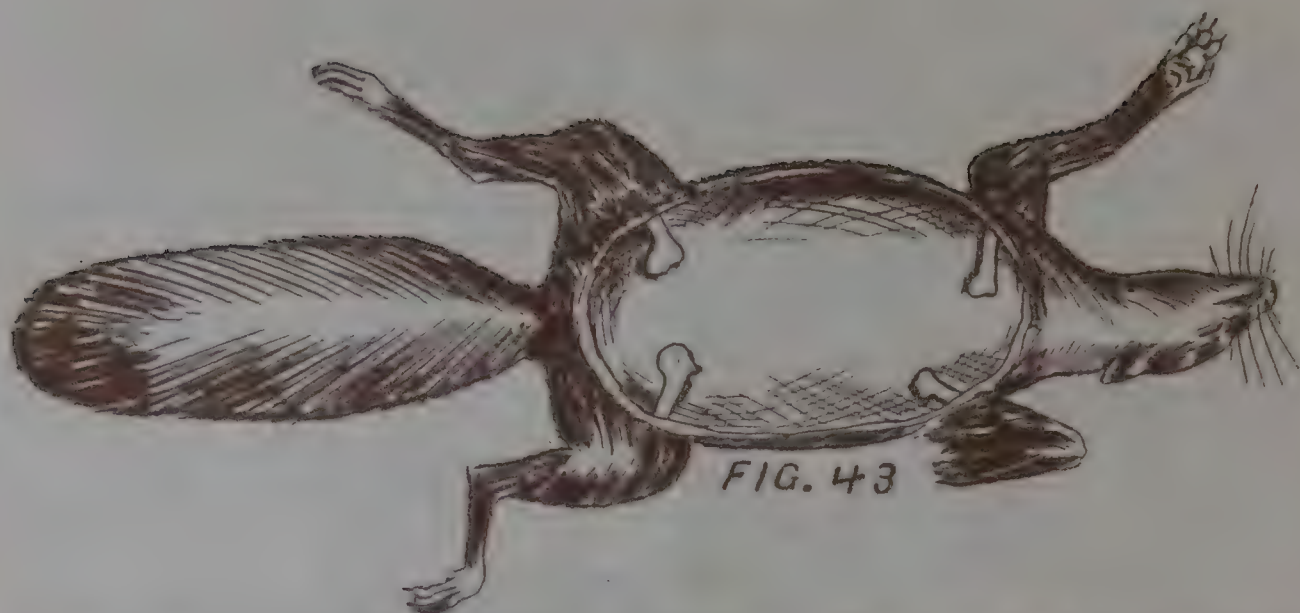


If you have not already done so, you should now **skin the legs.** This operation is performed by **inverting the skin over the leg entirely to the foot.** Then cut and scrape away **all of the flesh** from the leg bones. Now go over the whole interior of the skin, scraping and cutting off all the clinging fat and flesh. After you have done this thoroughly you should **preserve the skin** by giving it a coat of **arsenical paste**, using a small brush. Be sure and go over all parts thoroughly; do not neglect the leg bones. Tie a small piece of cotton on a wire and introduce some of the paste into the tail. It is a good plan to run a wire through the tail **at the outer end**, so the air can get in and dry the skin. After this is done, smooth up the skin and it will then appear like figure 43. It is now ready to be mounted.



Preparing the Skull

The skull is used in mounting all animals, just the same as for birds. In fact you retain the skull of **all specimens**, whatever their size or kind. Cut off the skull from the natural body at "C," figure 42, leaving the brain exposed. Remove the brain with the brain-spoon. Proceed to cut off **all of the fat and muscles from the head.** Take out the tongue, being



careful not to detach the joints of the jaws. The best way to clean the skulls is to boil them, when they will come out nice and white. After you have performed this you are now ready to take up the actual mounting. Remember that in mounting small animals the following bones are retained—all of the leg bones and the skull.

LESSON THIRTEEN

MOUNTING SQUIRRELS

General Remarks

The mounting of specimens is where the real art is exhibited. The following lesson is purposely made as brief as possible, and yet all the essentials set forth. The students should always remember while taking this course of lessons that we expect him to keep in touch with the instructors and to write freely on all questions that are not made perfectly clear.

In mounting small animals, several good methods are in use. It is some question with us whether it would not be best to speak of **one only**, as some of our students may "switch" from one to the other, and master none. We shall, however, present two of the very best methods ever devised for mounting specimens of this kind, and allow the student to take his choice. Our advice is to select one and stick to it until proficiency has been attained, then the other may be tried. The first presented would appear simpler for the amateur and **we recommend that it be the one chosen for your first work.**

Tools and Materials

The tools and materials needed are exactly the same as used for mounting birds, except the wires are different in lengths. You should have on hand a supply of **chopped** tow and excelsior. Instead of building a manikin or artificial body, as you did for mounting birds, we will use an entirely different method, which is really a **stuffing process**. You will need the following wires:

1 wire 20 inches long, sharp at BOTH ends.

4 wires 12 inches long, sharp at ONE end.

These are all the wires required for mounting squirrels and other specimens of similar size.

Preparing the Head

Now take the natural skull and replace the muscles by using potter's clay. The clay must be mixed until smooth and of just the right consistency so that it will stick well to the bone. After you have the skull properly prepared, it will appear like **figure 44**. The skull should now be carefully returned into the head skin. You should, of course, do this **at once** while the skin is fresh. Now measure on the natural body, **figure 42**, the distance "A" to "B," which represents the distance between the attachment of the front and rear legs, for you will need this measurement a little later.

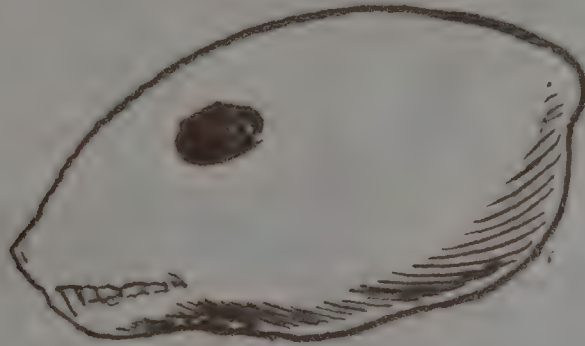


FIG. 44

Wiring the Legs

You should now proceed to wire each of the legs. This is done by passing a wire through the bottom of the foot and along the leg bones until it comes out on the interior of the skin. The wires are then tied to the bones as shown in **figure 45**. You will have no particular difficulty, as the skin has been loosened entirely to the foot.

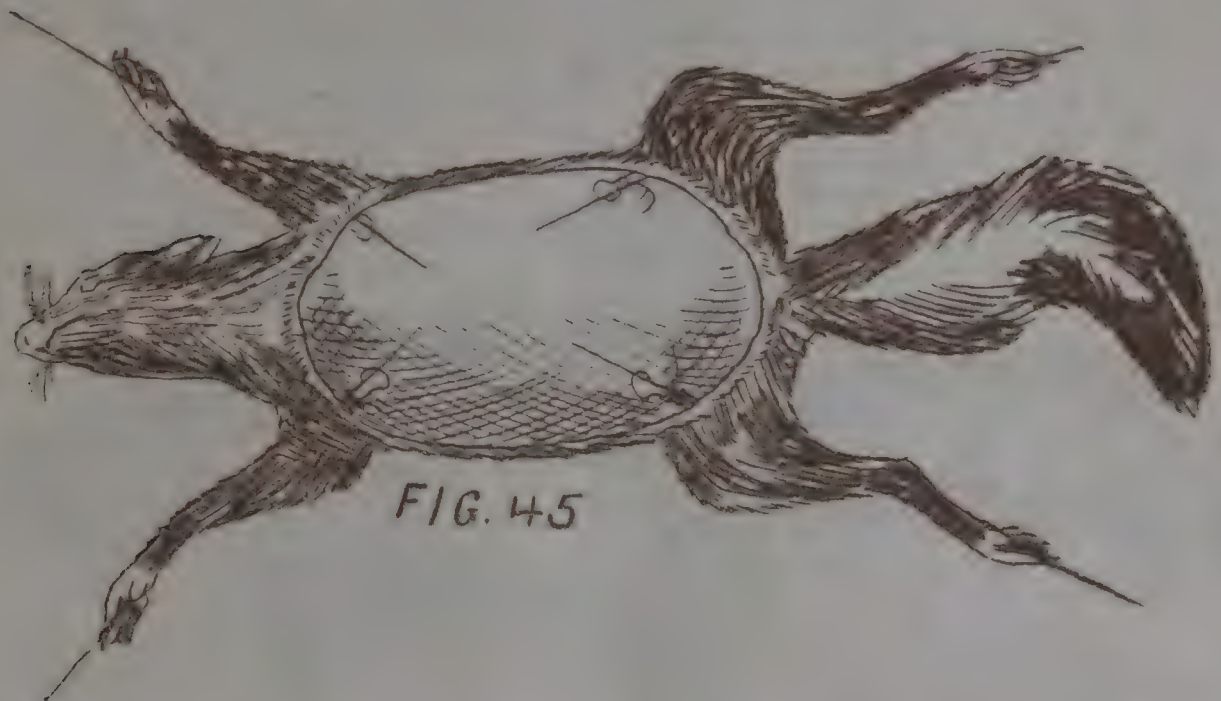


FIG. 45

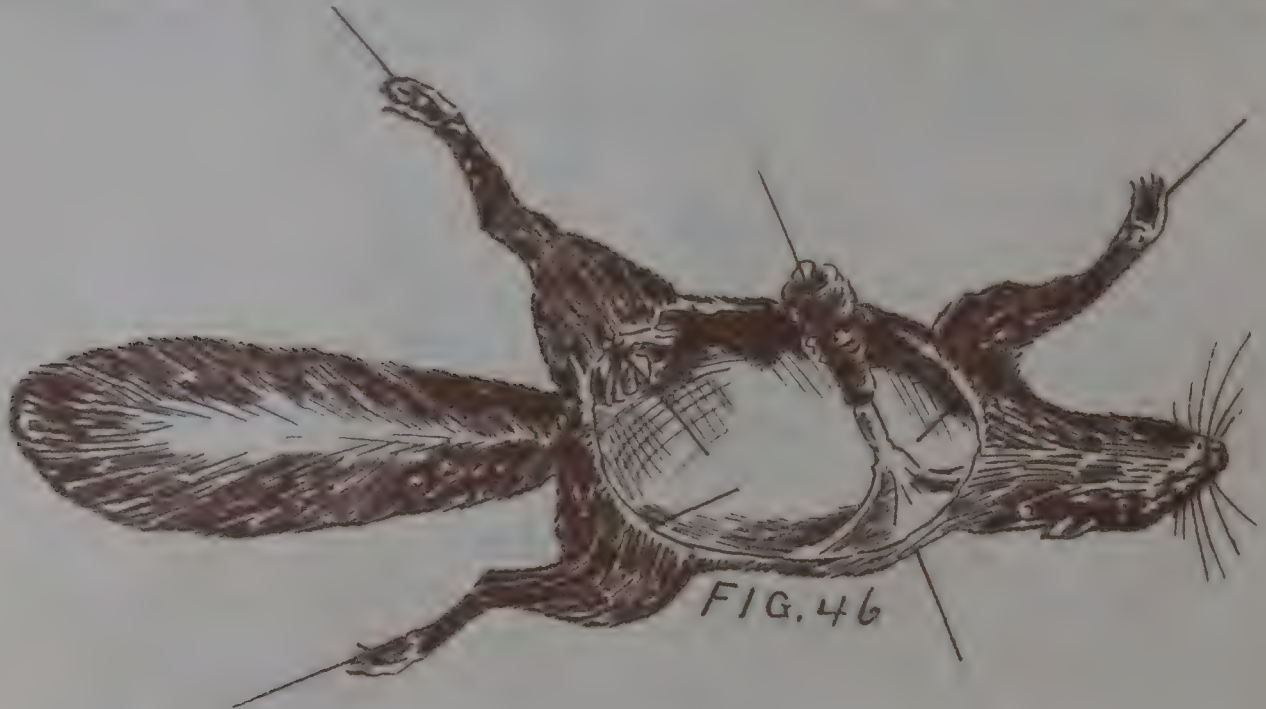
Now proceed to replace the muscles of the legs by winding fine tow around the bone and wire as shown in **figure 46**. Do not make the legs too large, and note from the natural body that the upper parts of the legs are **flat** and **not round**.

After you have replaced the muscles on all of the legs you can then take the long body wire and bend into it two loops, **figure 47A**. The dis-

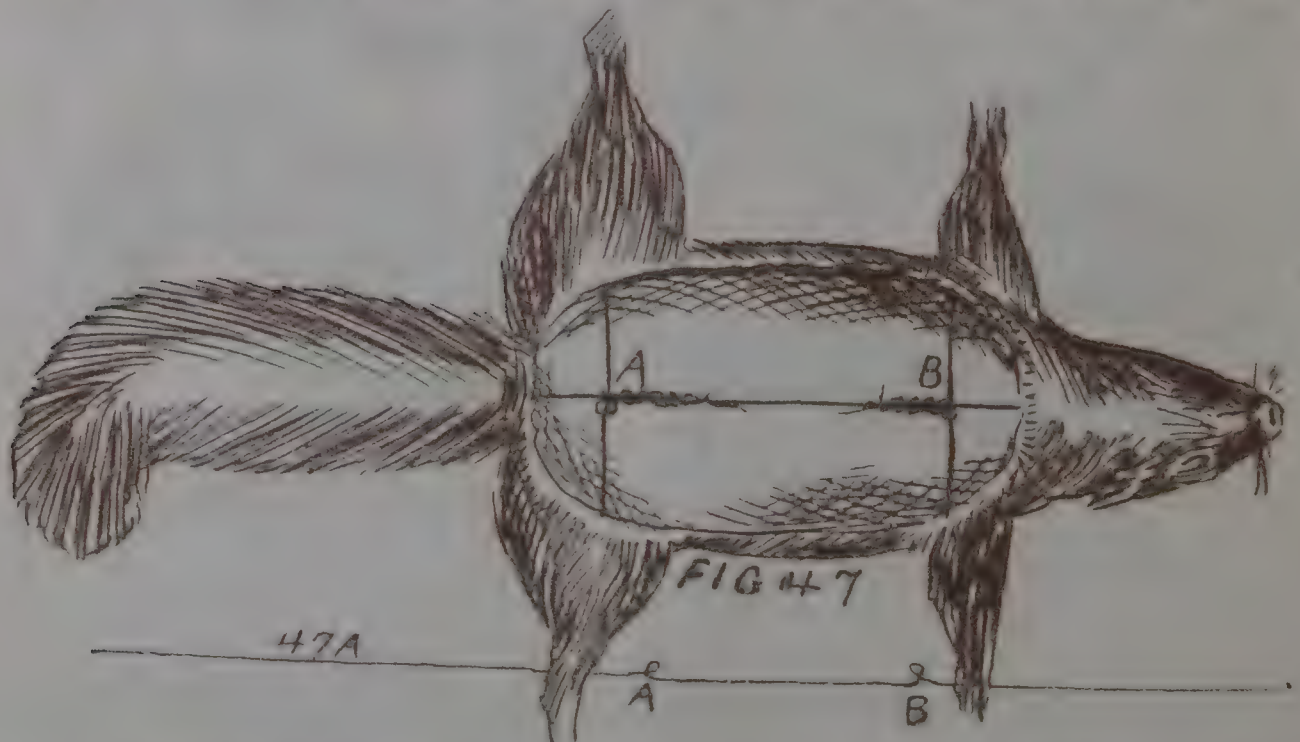
tance between these loops at "A" and "B" should be the same as between "A" and "B," figure 42. These loops represent the places where the leg-wires are to be attached.

The wire to the left of "A" is used for the tail, and to the right of "B" passes out through the head.

Take the tail wire and wind it with tow, making it very small on the point. After this is done, cover it well with arsenical paste, and insert this wire into the tail, where it will protrude from the outer end of the



tail. Now pass the other point of the wire through the opening at the base of the skull and out through the front part of the skull, or through one of the nostrils. Fill in around the base of the skull with potter's clay.



Now pass the two front leg wires through the loop "B" and twist them firmly about the body, as shown in figure 47. Repeat the operation with the hind legs, attaching the wires at point "A," winding them **very tightly** so they will be **firm and strong**. Your specimen will then appear

like figure 47, and you will be ready to proceed with the mounting, or "stuffing."

Stuffing the Specimen

Take a quantity of TOW and EXCELSIOR and chop them up together with a sharp hatchet or heavy shears. Now fill in the neck with the chopped tow until it is of the proper size. Then continue to fill the skin with the chopped tow, from the neck backwards. Use a small stuffing rod for this work. Be sure and not stuff the skin too tightly. Fill in well around the upper ends of the legs. It is a good plan to place a small amount of wet clay around the upper ends of the legs. You can now begin sewing the incision, starting at the front end, "A," figure 48. Continue the stuffing and sewing as shown in figure 48, until you have the specimen of the proper size and dimensions, at which time you will



have the incision completely sewed up. You may have used too much tow, and if so, it will be necessary to open up the incision and remove some of it.

CAUTION—The tendency is to overstuff specimens. Let this suggestion guide you in the matter.

After you have the specimen stuffed to your satisfaction, you can then "shape it up." Take the animal in the hands and squeeze the body here and there, and you can "shift" the tow around in this way until you get the desired shape. Bend the legs carefully into position and mount the specimen on a temporary board or stand.

The real artistic part of the work is to get the animal back into a natural life-like shape and attitude. You must use your own experience and judgment in this matter. You cannot use too much care for the results depend on how well this part of the work is done. A very desirable position for a squirrel is shown in figure 49. The back of the specimen should have a regular curve and also a natural one. Fix the feet and toes in exactly the position you want them when they are dry, and hold them in position with pins or tie them into position until they are thoroughly set.

Next give your attention to the ears of the specimen. With small specimens it is almost impossible to skin out the ears and line them with metal, as must be done with larger animals, so you must place the ears in natural positions by pinning cardboards around them, which are left on until the specimen is dry. Another method is to hold the ears in position by moulding around them with potter's clay, which is left until dry and hard, after which it is broken away and the ears cleaned.



FIG. 49

You are now ready to set the artificial eyes, which is done by inserting them **from the outside**, in a bed of clay that you have already placed in the eye cavities. Use great care getting the glass eyes properly beneath the eyelids. Now mould the lips into proper shapes, filling in on the inside of them with a little potter's clay. Hold them in the desired position with pins or by sewing with a needle and thread. After the specimen has been completed and all of the points looked after and taken care of, you can set it away until it becomes thoroughly dry.

You can now finish the specimen by cutting off the wire protruding from the head, cleaning the fur, waxing the nose and around the eyes, and transferring it to a permanent stand. Comb and brush the fur well and beat with a small whalebone or switch to make the fur natural and fluffy. It is sometimes necessary to clean specimens thoroughly with gasoline and plaster-of-Paris, which process is fully described in another lesson.

Another Method for Mounting Small Animals

Another method which is often used in mounting small animals is similar to that described for mounting birds. An artificial body is constructed and used instead of stuffing the skin with tow and excelsior. The body is made exactly the same way as we describe for making the artificial body for a bird. The legs of the specimens are built up as described in the preceding lessons, and the leg wires are attached to the artificial body by passing them through and anchoring with a hook. The specimen is then sewed up and finished as already directed. We do not recommend this method for very small animals, although the student can try it after he becomes familiar with the first method.



Mounting Larger Animals

Instructions are given in a later lesson for mounting all kinds of large animals, such as deer, bear, elk, etc. The stuffing process, however, can be used on animals up to the size of a raccoon, coyote, wild cat, etc. When mounting these medium size animals a **center-board** is used instead of the center wire, which we described in the first method in this booklet. A board, the proper size, is secured and the leg wires are anchored to it as shown in **figure 50**. It is of course, necessary to use very heavy wire, or if the animal is quite large to use iron rods which are fitted at the bottom with threads and nuts for attaching to the base board. In animals of this size it is necessary to **split the tail** on the under side and it also facilitates the work to split the legs down on the inner side as shown in the illustration. Further information is given on this subject in our lessons on mounting large animals.

A Few Important Suggestions

1. Be sure that **all** the fat and flesh are removed. This is very important.

2. Study the shapes and positions of **living animals** of all kinds, and also make a scrap-book showing pictures of all kinds of animals and birds, as it will be very useful to you in the future.

3. In mounting small animals, such as squirrels, with **open mouths**, you should carve a tongue out of pine and set same in a bed of glue and papier-mache. You should then wax the entire mouth and cover the tongue with wax, after which you can paint the entire interior of the mouth the proper shade.

4. Animals the size of a raccoon, badger, etc., should have the **ears skinned** out and the cartilage removed. You should then line the ears with sheet lead or tin, cut to the proper size and shape.

5. It is almost impossible to skin out the ears of rabbits, as they are so thin and delicate, and for this reason you must hold them in position with cardboards or clay until they are thoroughly dry. But by **careful work** you can skin even rabbit's ears and line them with tin.

6. The skins of small animals when they are to be mounted fresh should be salted heavily and allowed to remain a day or two before attempting to mount, but if the mounting is to be done later, let the skins become thoroughly dry. You can later work them up and relax as directed under the subject of "Relaxing Dry Skins."

7. It is a good plan to apply corrosive sublimate, dissolved in alcohol, to the feet and inside of the mouth of small specimens. Some Taxidermists use powdered preservative for small animals, but we prefer the **arsenical paste**.

8. Do not be discouraged if your first specimen is not perfect. Do not throw it away, however crude it may appear, for you will be interested later in comparing it with your other specimens, noting the progress that you have made.

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BOOK IV---Lessons 14 to 17

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LESSON FOURTEEN

LARGE ANIMALS

General Observation

In taking up the study of Taxidermy as applied to large animals, we believe we should frankly say to the student that his work may well be considered the most difficult of any branch of the art. To mount a deer, bear, elk, or similar specimen complete, requires a large amount of work, and we believe you will not desire to attempt it unless you intend to take up Taxidermy for a business. Even then you will find few persons who desire specimens of this kind. Large skins may be made into rugs, robes, etc., and are much more useful than the mounted specimens, and the work can be done at one-tenth the cost.

It is, however, necessary for a Taxidermist who is going into business for himself to understand exactly how to mount animals of **all kinds**, both large and small. The mounting of large mammals calls for considerable practice, and you must not expect to turn out specimens that are anywhere near **perfect** the first efforts you make, but by following the instructions carefully you will not make an absolute failure, and after you have mounted a number you will commence to get very good results indeed. We treat the subject in a **general way**, but the student will find it sufficient to enable him to learn the mounting of large animals **thoroughly**. If you undertake this department of the work, we solicit your personal correspondence if you meet points that you do not clearly understand. We want you to know, however, that it will take a great deal of good **hard work**, **considerable time** and **much patience** to become a skilled Taxidermist on **large mammals**.

Tools and Materials

Have a supply of the various tools and instruments mentioned in the preceding lessons, and in addition to this you should have many of the tools found in a carpenter's chest, such as hammer, plane, draw-knife, saw, etc. You also need dies and taps, skinning knife, fleshing knife, **currier's knife**, etc.

Measurements

Nothing is more important in mounting mammals than correct and detailed measurements. These must be taken **systematically** and **carefully** from the **natural body**. They should be recorded in your note book, together with such drawings, sketches, etc., as you think will prove helpful when you come to the actual mounting.

In case it is necessary for you to mount a skin and you do not have the natural body so that you can take measurements, then there is no other source whatever than to simply **use your own judgment** and build up the manikin accordingly. Fit the skin on often and in this way you arrive at the correct size. **Figure 60** is intended to represent the measurements which you should have. Study the figures carefully and you will understand the meaning of each line. These measurements must be carefully recorded so that you will understand them and be able to build the manikin accordingly. It is the easiest matter in the world to make the manikin **too large**, and for this reason see that no part is larger than the original measurement, but if anything it should be a **trifle smaller**.



FIG. 60

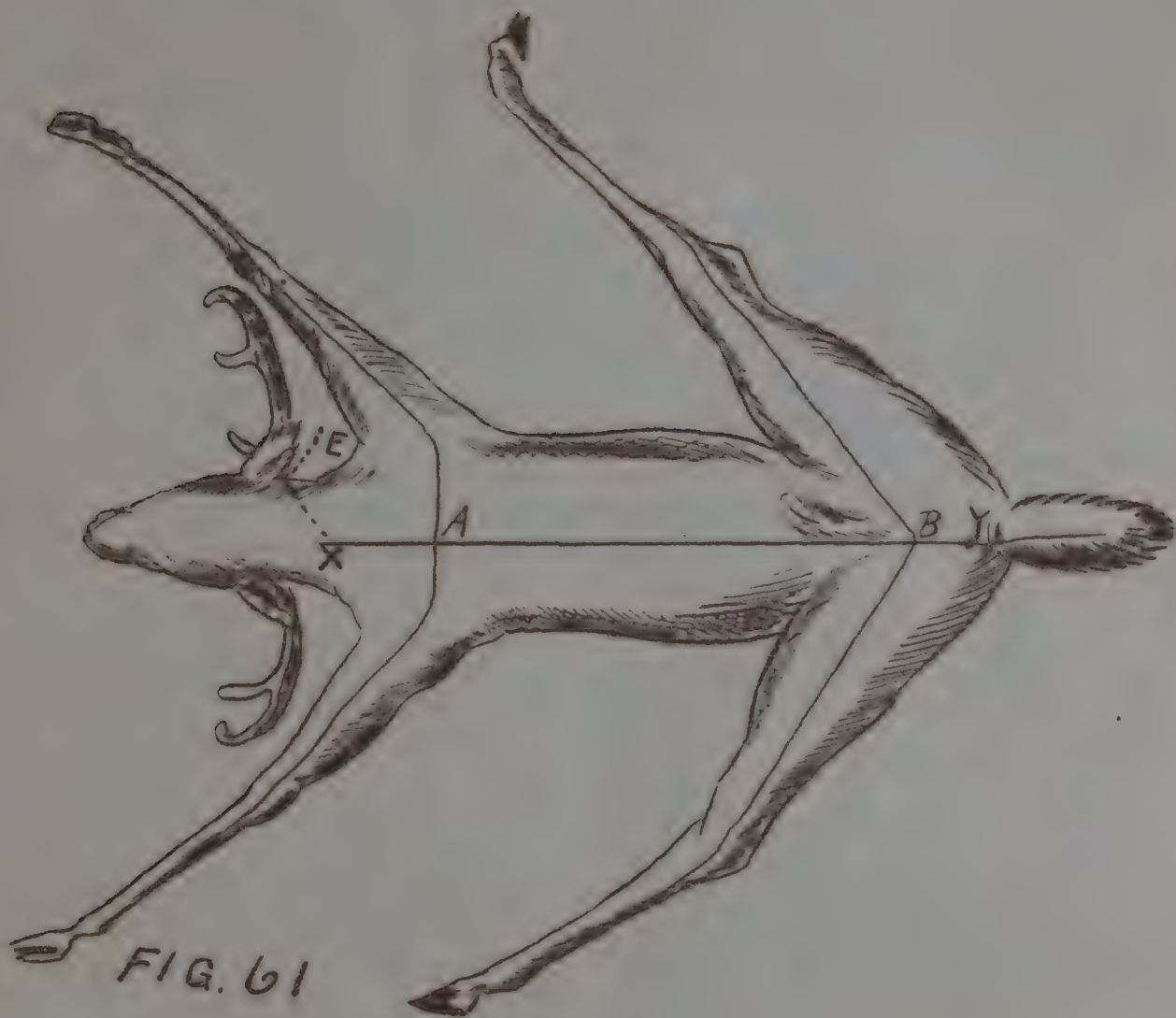


FIG. 61

Skinning Mammals

Our illustration No. 61 shows plainly the cuts to be made in the hide when skinning a deer. The same cuts are made when skinning other large mammals. Note that the leg-cuts start down on the inside of the leg and then pass around to the back side below the knee. First make the incision from "X" to "Y," then make the leg incisions, starting at the two points "A" and "B." Cut entirely to the hoofs.

If you are skinning animals with antlers it will be necessary to make another incision on the back of the neck so that the skin can be removed over the antlers. If, however, the antlers are very large, like those of the elk, then it is best to make this incision from "X" to "E," and the skin can then be removed around the antlers instead of over them. After the incisions have been made, proceed to skin by separating the skin from the body, using a sharp skinning knife. It is best to skin the rear end of the body first, then if necessary raise the animal up with a derrick. Care should be used that no bad cuts are made through the skin. Detach the leg bones **at the hoof**. Skin carefully over the head, detaching the ears **close to the skull**. Do not cut the eyelids, lips or nostrils. Split the tail on the under side entirely to the point and skin out the bone.

Treating the Skin

One of the most important points in mounting mammals is to treat the hide so that it will be in the best of condition, and so that it can be thoroughly pickled and preserved. After the skin is removed, stretch it out and scrape away **all the fat and flesh** from all parts of the interior. If you cannot take up the actual mounting at once, then salt the skin **very heavily**, and it will keep in this condition for some time. The ears must be skinned out if the skin is to be laid away.

We assume, however, that you are going right ahead with the work and we will instruct you how to proceed. It is absolutely necessary to **shave heavy hides down until they are quite thin**. For this purpose you need a **fleshing knife** or a **currier's knife**. Place the skin over a beam and with a heavy fleshing knife or currier's knife proceed to shave **all the fat and flesh off**, until you get down to the skin itself. Go over the **entire interior** in this way. When shaving around the eyes, lips and nose, you should use a heavy scalpel or skinning knife, and pare these parts **very thin**. Turn the lips inside out and remove the cartilage, making them as thin as shoe leather.

You must now **skin the ears**. This operation is performed by turning the ears **inside out**, separating the cartilage from the **back side of the ear first**, until the point is reached. Then pare off from the front side of the ear skin. This is quite a difficult task at first, but with practice you will be able to skin the ears of animals quite rapidly. (For further instructions on skinning ears, see lesson "Mounting Game Heads.") After all this work has been done and you are satisfied that the skin has been shaved down properly, it is then ready to be placed in the **pickle-bath**. This bath is an **absolute necessity** to the Taxidermist, and in Lesson 21 we will give accurate instructions on how it is made. Be sure that there is sufficient bath to cover all parts of the hide.

Pickling the Hide

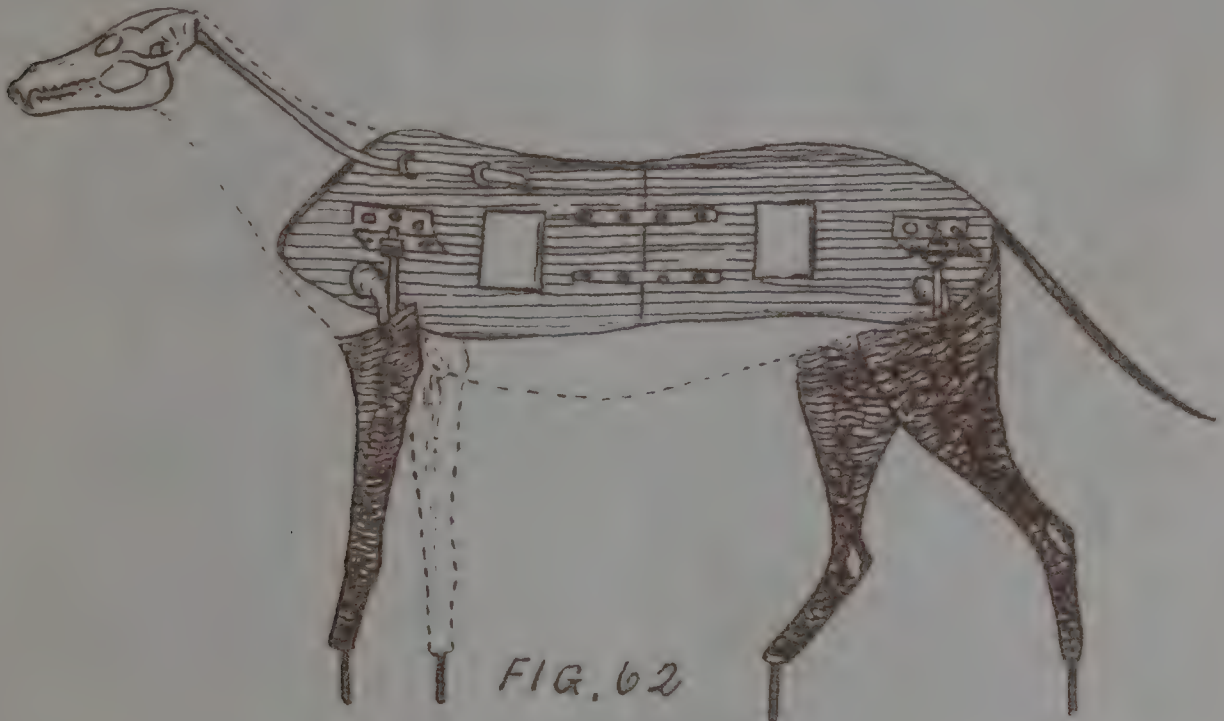
The pickling process requires from three days to three weeks, depending on how heavy the hide is, and on how well you have shaved it down. After it has been properly pickled, it will appear white. Examine the skin occasionally and as long as you can see any bluish places you may know that it is **raw** and needs further pickling. We will now leave the skin to the pickle-bath and proceed to a more interesting and important part, namely, constructing the false body or manikin.

LESSON FIFTEEN

Mounting Mammals

The following instructions apply to mounting deer, bear, buffalo and other large animals, hence we will make the instructions general and not apply to any particular animal.

You will need a center board, four rods for the legs, one rod for the neck and one rod for the tail. In addition to this, you should have four wrought iron brackets to be used in attaching the leg rods to the center board.



The Center Board

First select a stout, clear, pine board, 1 inch thick for specimens up to the size of a wolf, and 2 inches thick for larger specimens. This center board can be used **straight** or you can cut the top of it into the shape of the back-line like **figures 62 and 66**. This center board should be a little shorter than the entire length of the body.

The Leg Rods

Now prepare the four leg rods. Always use the Norway iron, as it is tougher and will not rust so easily. The length of these rods are, of course, determined by measurements made from the natural body. The rods must be bent to the proper shapes before the specimen is mounted, for it is impossible to bend them afterwards. Have threads cut for several inches on both top and bottom and fitted with two nuts as shown in figure 63.

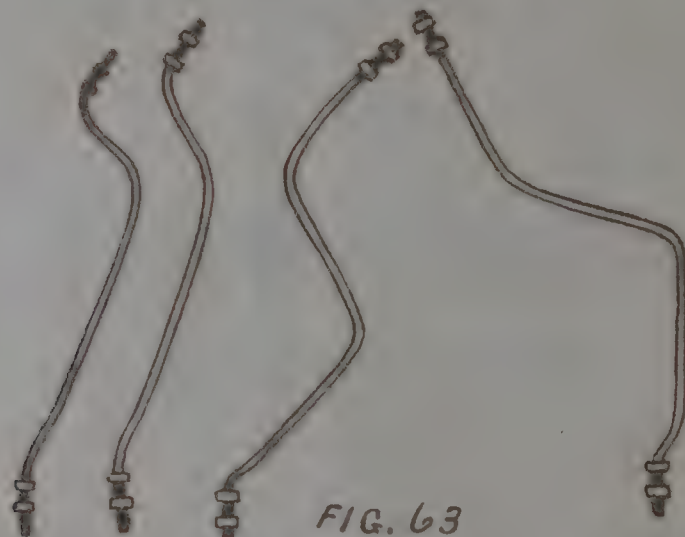
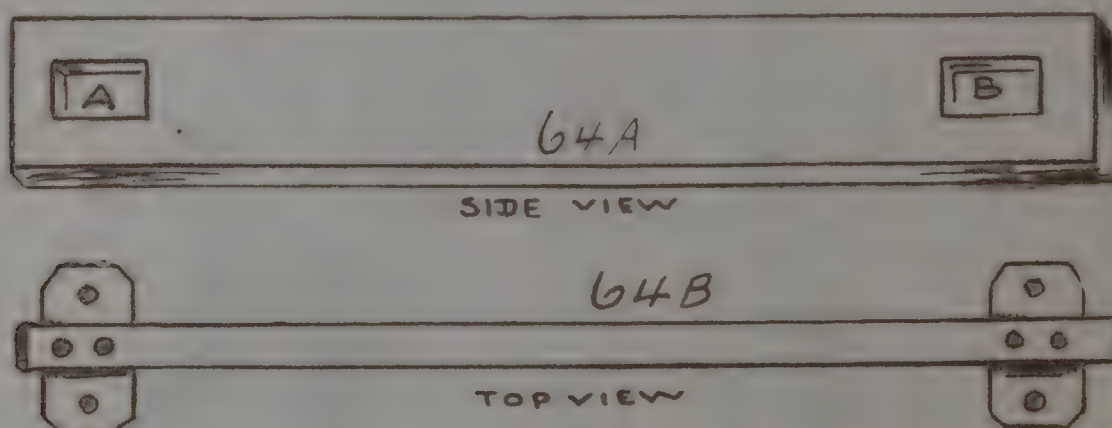


FIG. 63

Leg Rods

There are two ways in which you can attach the leg rods to the center board. You can mortise holes through the center board as shown in figure 64A and then set in cross blocks, as shown in 64B. Holes should be bored in each end of these cross blocks to receive the leg rods. They are fastened in position by having one nut above and one below each block, using large washers.



The most satisfactory way for attaching the leg rods for the larger animals is to have four iron brackets made like figure 65. These are attached to the center board by the use of screws or bolts. The outer end

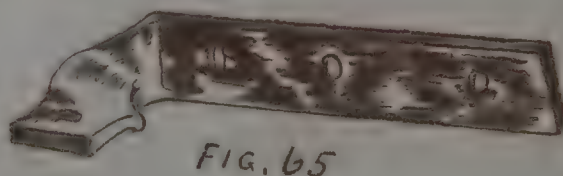


FIG. 65

of the brackets should be drilled to receive the leg-rods. After the rods and center board are prepared you should attach them together and fasten the leg-rods to the brackets.

If you desire to mount animals with the **body curved to one side**, it will be necessary to saw the center board into two parts and then attach the ends together by use of wrought iron plates, which can be bent, giving the body the desired form. **Figures 62 and 66** show two plates set on the center board, which has been sawed in two. The holes through the center board can be used for sewing back and forth through the artificial body.

Now attach the natural skull to the neck rod by setting same in plaster-of-Paris. Some Taxidermists fit a block of wood into the skull and set the rod into the wood. The neck rod is attached to the center board with heavy staples, which are clinched on the opposite side. Now attach the tail rod as shown in **figure 66**. You are now ready to build the manikin.

Wrapping the Legs

If you are going to use the natural leg-bones, which is a matter of choice, you should wind them very tightly to the leg rods, and then build up the legs with excelsior, like **figures 62 and 63**. A careful study of **living animals** will instruct you in the proper shapes for the legs. In constructing the hind legs, it is necessary to wind separately the small portion back of the knees, to form these peculiar joints. The extra parts are made by winding tow firmly over wires. After this is wrapped you form it into the correct shape and then attach it to the leg by wrapping it firmly at both ends. This will, of course, leave an opening at the knee as shown. This opening is necessary in mounting all large animals.

Wrapping the Artificial Body

You are now ready to continue making the manikin. Take a quantity of excelsior and lay it against the center board and wrap it a few times with heavy string. Place excelsior on the opposite side, to correspond, as required, winding very firmly, until you have the manikin completed, when it will then appear like **figures 67 and 70**.

This part of the work is, of course, **very important**. In mounting mammals you must get the body the **right shape and size** if you are to do a successful job, therefore take your time and work carefully. Note the measurements very often, and if necessary, do the work over again when you make mistakes. When the manikin is completed it will be **firm and solid**. When mounting animals larger than a coyote, it is best to attach the leg rods to the **base** before you commence to construct the body.

Now construct the tail by winding excelsior or tow firmly on the wire, being sure that you do not get it too large, and that it has the proper length and "taper."

CAUTION—The tendency of the beginner is to make all parts of the body **TOO LARGE**. If you build the body **TOO LARGE**, it is a very difficult matter to make it smaller, but if it is **TOO SMALL**, you can easily make it larger by adding additional excelsior and building on where needed. Therefore, be sure that the body is not larger than it ought to be, but rather a trifle smaller.

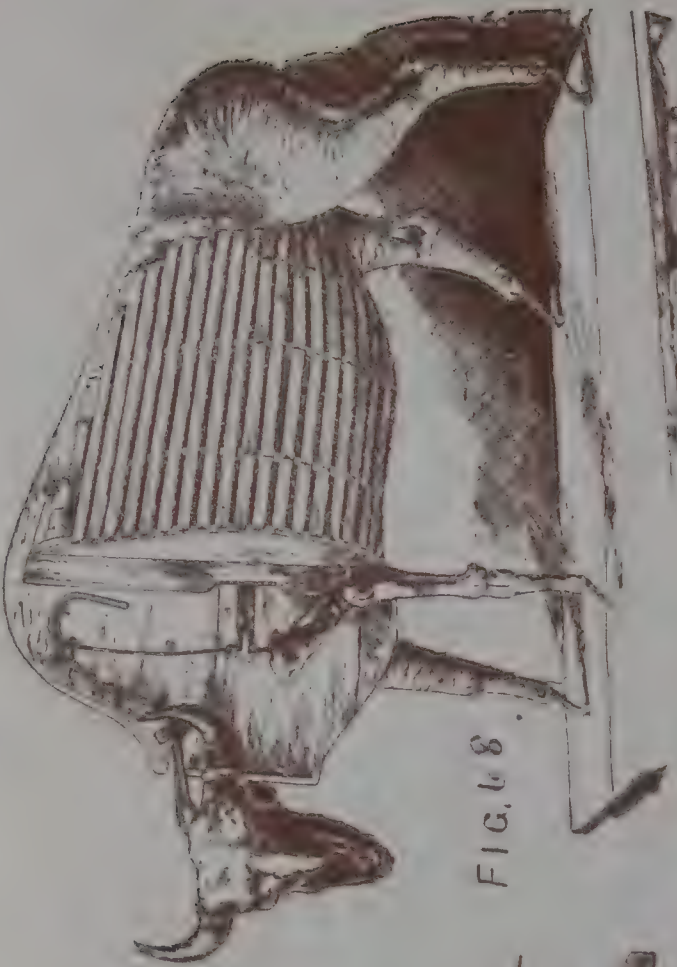


FIG. 68.

MAXIM FOR MALE AMERICAN BISON - 1870



FIG. 66

MAXIM FOR TIGER - FIRST BUSH.



FIG. 67

MAXIM FOR TIGER - COMPLETED.



FIG. 69

MAXIM FOR AMERICAN BISON - COMPLETED.

Preparing the Skull

After you have the body entirely completed, you can give your attention to the head. Place a small quantity of excelsior on the skull to replace the muscles, wind it firmly in position and add a little here and there until you have the skull the proper proportion. It will then appear like skull in figure 67.

You are now ready to cover the entire manikin with potter's clay. It is absolutely necessary to have potter's clay when mounting animals. The clay should be mixed with water until it is in such condition that it can be spread easily with the hand. Take a handful of clay and apply it with a sliding motion as far as it will extend, then take another handful and proceed in the same manner until you have covered the entire manikin, including the neck, tail and legs, with a layer of clay one-fourth inch or more in thickness. In many places you can put on a great deal more clay if it is necessary to fill out the body. The clay must not be put on, however, until you have the skin ready, for the skin must go on while the clay is fresh and soft. Put plenty of clay around the skull, for you will need it when you are moulding the lips and face into their natural shapes.



LESSON SIXTEEN

Preparing the Skin

The skin should have been removed from the pickle-bath before the clay is put on the manikin. You take the skin from the pickle-bath and hang it up for an hour or two so that the pickle will drain out, and then wash the skin thoroughly through many clear waters to remove the salt and alum. Then place the skin on a shaving beam and go all over the interior with a fleshing knife or currier's knife. The skin is apt to be stiff when it comes from the pickle-bath, and for this reason it is necessary to shave it down a great deal and break it up until it is perfectly

soft in all parts. You may have to shave down the head skin again with a heavy skinning knife, but this work **must be done** and the skin **must be soft** or you are not going to have a good job when you are done.

You should now apply the preservative. For this purpose never use anything except the arsenical paste. With a good brush go over the entire interior of the skin and paint it well with the poisoned paste. **Do not neglect any parts.** Be sure to reach the interior of the tail, ears, lips, etc. It is a good plan to let the skin lie a short time and then give it another coat of paste before putting it on the manikin.

You should now line the ears with sheet lead or tin that has been cut and pounded into proper shape.

Fitting the Skin

It is necessary to **try the skin on the manikin** from time to time while you are constructing it, so that you will know that the size is right. When everything is in readiness throw the skin over the manikin and stretch it around the belly. Stitch it back of the front legs and in front of the hind legs. Try it on all parts, including the head and legs. Be sure that everything is in proper shape and condition and you can then start to sew the skin on, commencing at the throat, and continue backwards. You may find it necessary from time to time to put a little extra clay on the specimen to bring out the muscles.

Sew up the legs and tail carefully. In sewing you must, of course, use heavy linen thread that has been waxed. A quantity of clay should be put under each ear, so that they can be set in their proper positions. Now fill in the lips with clay and mould them carefully into correct shapes. You should have an abundance of clay on the face and lips so that you can mould the face into any desired expression. This work must all be done **before the specimen starts to dry.** Take plenty of time and use much care in fitting the skin. Remember that while sewing the skin on is the proper time to insert the clay for the muscles and to get your animal in its lifelike shape and attitude.

Finishing the Specimens

When you have completed the work in this way, you should allow the animal to dry before finishing. It sometimes takes several weeks for large animals to become thoroughly dry, and they should be kept in a dry, warm place, but not close to a stove or other artificial heat.

When you are sure that the animal is thoroughly dry you can proceed to finish it. Comb and brush the hair all over the animal until it is clean and fluffy. It may be necessary to wash it with warm water or gasoline if it is not absolutely clean.

Set the eyes in a bed of potter's clay or papier-mache. Dig out the clay around the lips and fill in with papier-mache. When the papier-mache is dry you should paint the lips and nostrils with black melted wax.

If the hair is missing in any small spots it will be necessary to glue in hair taken from other parts of the body. Varnish the feet and finish up the base in a neat way. There are, of course, many little things not mentioned in the lessons that will come to you after you have mounted a few animals. You will understand the details of the work and will improve in quality of your mounting very rapidly.

LESSON SEVENTEEN

Special Instructions

1st. In mounting very large animals it is sometimes desirable to **build a frame work**, instead of making a solid body; see **figure 68**. This frame work allows the air to circulate through the specimen and it dries quickly. It also makes the specimen much lighter in weight, which is desirable with large animals such as elk, buffalo, etc. **Figure 69** will give you a clear idea of how to proceed.

2nd. In mounting animals with long hair, such as bear, wolf, etc., it is not necessary to cover all of the body with clay, although we usually do so. You may wind the body very smooth and put the skin on directly against the excelsior. The head and neck are always covered with clay.

3rd. In mounting a large animal you put on its permanent base right at first. You should not finish the base until the specimen is done, when you can cover the entire base with papier-mache and paint it the desired color, which makes a very attractive piece of work.

4th. When you are sewing the skin on the animal, you are apt to find when you get well along that you have **a great deal more skin than you know what to do with**. Do not be alarmed, however, for you can take this up by going over the body and making a few wrinkles in the skin. You can easily take up 8 or 10 inches in this way on an elk. When the animal is dry, the wrinkles will come out and the job will be perfect. It is part of the trade to learn to take up the extra hide, but it is not difficult to learn, as you will discover from your first efforts.

5th. If you wish to mount animals with open mouths you should of course place the jaws in position before mounting. See **figure 66**. To finish the inside of the mouth you must carve an artificial tongue from pine and set it in a bed of papier-mache. The interior of the mouth is covered with papier-mache and filled in to look natural, after which it is covered with melted wax, then painted the desired shade of color. A complete discussion of "open mouths" will be found later in the lessons.

Papier-Mache

The use of papier-mache is so general and the substance is so **very important** in Taxidermy work, that the student should fully understand how it is made. We can do no better than to quote that excellent authority, Wm. T. Hornaday:

How to Make and Use It

Every Taxidermist must know how to make good papier-mache before his education can be considered complete. This material is absolutely indispensable in Taxidermic work and its composition should be thoroughly understood. It is used in filling up holes, seams and cracks, in modeling the mouth parts of specimens that have been mounted with the mouth open, in restoring missing parts of various specimens, in modeling bones to go in "restored" skeletons, etc. It is also of great value in modeling groundwork to be made in imitation of rock or wood. There is really no good substitute for this material. When properly made it sticks tightly to its place, is easy moulded, can be crowded into the smallest crack, dries quickly when exposed to the air, is hard and smooth when dry, takes paint readily, and yet when kept wrapped in a wet cloth under an inverted bowl can be kept soft for several days.

There are several ways of making papier-mache, according to the use to which it is to be put. I have taken pains to prepare an exact formula for making the finest and best quality, and from that the worker will undoubtedly be able to work out variations in quality, according to his needs.

The most important ingredient is the paper pulp. The finest pulp for papier-mache is that made by the ton in the Bureau of Engraving and Printing in Washington, from mutilated paper currency, but not from tobacco stamps, which is coarse and not fit for fine work. When needed for use, take a dry sheet or ball of the right size, dissolve and beat it up into a thin mush in a bowl of water, until the particles are all well separated, then pour it on a sieve to run the water out without losing the pulp. The water is then squeezed out of it by gentle pressure with the hand, but it should not by any means be squeezed as dry as possible, for the water is an important factor. Pulp prepared thus can be stirred up with glue into a perfectly homogenous paste, free from all lumps, and so fine it can be pressed into the smallest crack.

If you have no manufactured pulp, then you must make it yourself. Procure a lot of old newspapers, or as soft paper as possible, tear them to bits, put the pieces in a kettle of boiling water and beat the mass in any way you please, boiling it meanwhile, until it becomes paper pulp. It should be free from lumps and small pieces of paper, or it will not work well.

The following are the ingredients necessary to make a lump of papier-mache a little larger than an ordinary baseball and weighing 17 ounces:

Wet paper pulp (dry paper)	1 oz.,	water	3 oz....4 oz.	advoirdupois
Dry Plaster Paris.....			8 oz.	advoirdupois
Hot glue.....			½ gill, or 4½	tablespoonfuls

While the paper pulp is being prepared, melt some best Irish glue in the glue-pot, and make it of the same thickness and general consistency as that used by cabinet-makers. Measure the different ingredients to be used, until the result teaches you what good papier-mache is like, and after that you can be guided by your judgment as you proceed. On taking the paper pulp from the water, give it a gentle squeeze, but by no means squeeze it as dry as you can. Now put it in a bowl, put over it about three tablespoonfuls of your hot glue, and stir the mass up into a soft and very sticky paste. Next add your plaster Paris and mix it thoroughly. By the time you have used about three ounces of the plaster, the mass is so dry and thick you can hardly work it. Now add the remainder of your glue, work it up again until it becomes sticky once more, then add the remainder of your plaster. Squeeze it vigorously through your fingers to thoroughly mix the mass, and work it until it is free from lumps, is finely kneaded, and is sticky enough to stick fast to the surface of a plained board when you rub a bit on it by firm pressure of the finger. If it is too dry to stick fast, add a few drops of either glue or water, it makes little difference which, and work it up again. When the paper pulp is poor, and the mache is inclined to be lumpy, lay the mass upon a smooth board, take a hammer and pound it hard to grind it up fine.

If the papier-mache is not sticky enough to stick fast to whatever a bit of it is rubbed upon, it is a failure and requires more glue. In using it the mass should be kept in a lump and used as soon as possible after it is made. Keep the surface of the lump moist by means of a wet cloth laid over it, for if you do not, the surface will dry rapidly. If you wish to keep it over night, or longer, wrap it up in several thicknesses of wet cotton cloth, and put it under an inverted bowl. If it should by accident or delay become a trifle too stiff to work well, add a few drops of water to the mass, pound it with the hammer, and work it over again. If you wish to keep a lump for a week, to use daily, add a few drops of glycerine when you make it, so that it will dry more slowly.

The papier-mache made when the above formula was prepared had the following qualities: When tested by rubbing between the thumb and finger, it was sticky and covered the thumb with a thin coating. (Had it left the thumb clean, it would have been because it contained too much water.) When rubbed upon a pane of glass, it stuck tightly and dried hard in three hours, without cracking, and could only be removed with a knife. When spread in a layer, as thin as writing paper, it dried in half an hour. A mass actually used dried hard enough to coat with wax in eighteen hours, and, without cracking, became as hard as wood; yet a similar quantity wrapped in a wet cloth and placed under an inverted bowl kept soft and fit for use for an entire week.

Such are the qualities of first-class papier mache, and the manner of producing them all. I have dwelt at great length on this material because it is such an important and indispensable factor in general Taxidermy work. It will pay any Taxidermist to become an expert in making it and using it, and a little later, when we get to modeling intricate mouth parts, and making all sorts of restorations and repairs, we shall see what a valuable servant is papier-mache.

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*A Comprehensive Treatise on
Collecting and Preserving all
Subjects of Natural History*

BY

Prof. J. W. ELWOOD, B. S.

BOOK V---Lessons 18 to 21

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LESSON EI

Mounting G

There is hardly another branch of taxidermy that possesses so much interest and gives such satisfaction to the beginner as does the mounting of game heads. The subject is easily understood, and if proper care be taken there are no reasons why the very first job should not be a good one. We shall illustrate this lesson by the use of the deer head, as it is the one most commonly mounted and is representative of all horned and antlered specimens. The heads of dogs, bears, wolves, female deer, elk, etc., being without horns are, of course, mounted in a similar manner, but the work is simpler since the horns or antlers are not present to offer additional attention and labor.

Care in the Field

When the specimen has been secured in the field the first thing to do is to carefully note the color of the eyes, the shape of the neck and face, and in general make such observations as will assist you in reproducing the specimen as it is in nature.

It is not likely that the entire carcass will be taken into the work-room nor is it likely that the head will be mounted at once. We shall, however, assume that such is the case, and then instruct you how to proceed if you desire to save the skin for any length of time before mounting.

After securing the specimen and noting the points mentioned above, sever the neck from the trunk. Many a splendid specimen has been practically ruined at this point. Heads should be mounted with **LONG NECKS**. For this reason cut the neck off **CLOSE TO THE SHOULDERS**, leaving the lower part considerably the longer.

Skinning the Head

Always make the incision down the **BACK OF THE NECK**. Never cut a deer or other animal of this kind **on the throat**, for it is almost impossible to sew the seam so that it will not show.

Commence at the back of the neck at point "A" in figure 85, and cut straight forward along the back of the neck until you reach the points "X," midway between the antlers, then make additional cuts from "X" to "D" and "C" at the base of each antler. **These are the only cuts necessary to make when skinning a game head.** Skin the neck from this incision until you reach the ears, which should be detached **close to the skull**.

If you are skinning in the field and it is necessary to leave the carcass of the animal, you should at this time measure the distance around the neck just back of the ears, also at the base of the neck. You will need these measurements later.

Now cut off the neck at the **very base of the skull**, and invert the skin over the head. Detach it around the antlers. The cut should be **close to the antlers**, leaving no hair attached to them.

Now continue the skinning until the eyes are reached, where you must proceed with a great deal of care, for it is very easy to cut the eyelids, and if you do you will never be able to repair them perfectly, so a **prevention** is better than a **cure** in this instance. The corners of the eyelids are apt to be attached firmly to the bone and must be separated by carefully plying with a knife or scalpel.

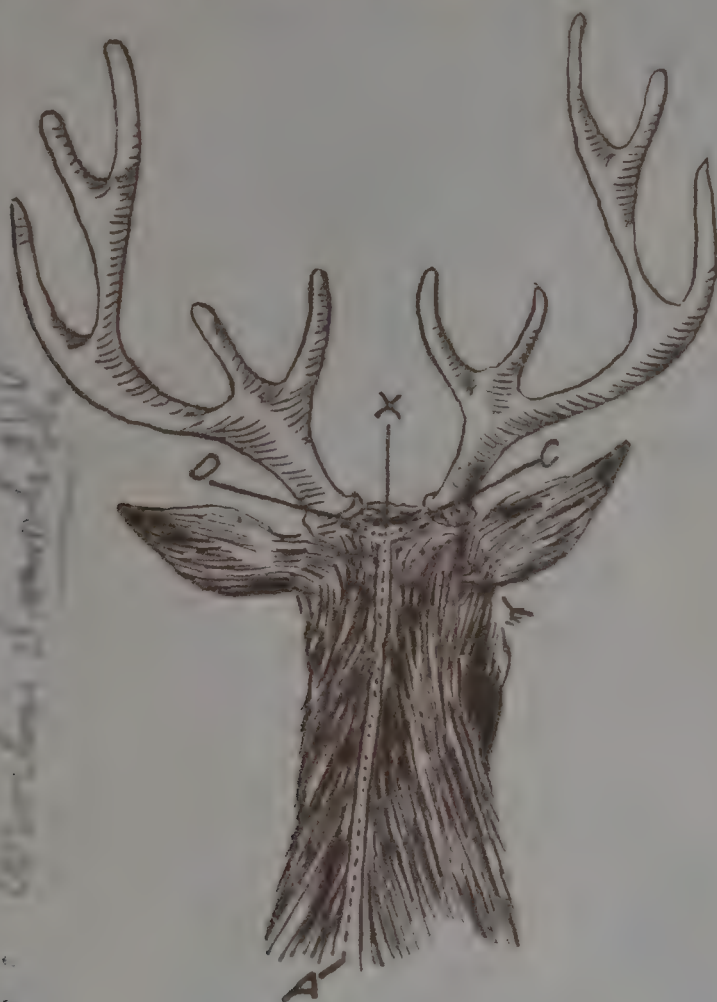


Fig. 85

Continue to invert the skin until you reach the nostrils and mouth. See figure 86. Now work **slowly** and **carefully** and you will have no trouble. Cut the lips away **close to the teeth** and make no incisions through the skin. The skin will now be entirely separated from the skull, but there will, of course, be a great deal of fat and flesh clinging to it.

Skinning the Ears

You should now proceed to **skin the ears**. Some so-called Taxidermists do not consider it necessary to skin out the ears at all, but simply preserve them and allow them to dry up with the cartilage inside, but this is always **poor work**. The specimens never look right, for the ears shrink and shrivel and are very unsightly; therefore in **all cases** **skin out the ears entirely to the points**. This work is done as follows:

Do not make any cuts in the ear-skin, but turn the ears inside out. Commence at the base of the ear, where it joined the skull, and separate the two walls of the ear to the very tips, then continue to turn it inside out, separating the cartilage from the back part of the ear as you proceed. Do not try to separate it from the **front part** of the ear at this time, but continue the work on the **back part** until you have reached the

point. Some blunt instrument, such as a spoon handle or flat hardwood stick, is very useful. Force the cartilage loose by working along in this way with a scalpel and other instruments, and you will soon reach the point of the ear without a great deal of difficulty.



FIG. 86

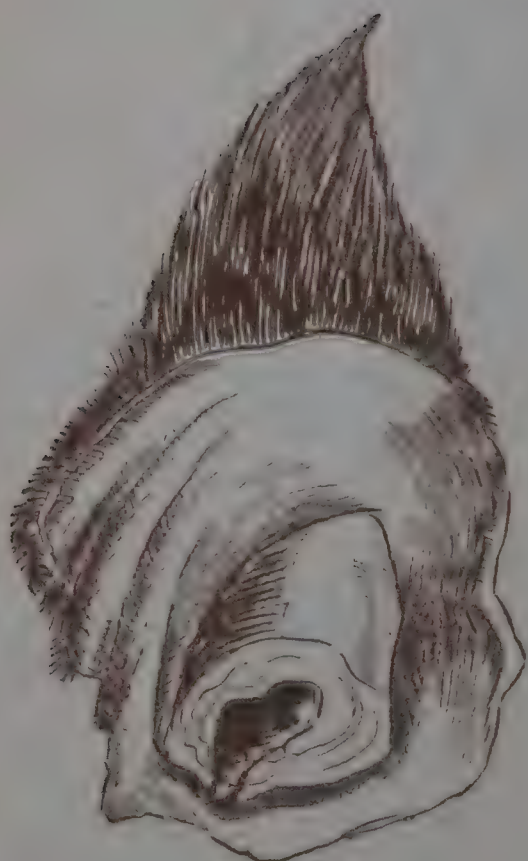


FIG. 87



FIG. 88

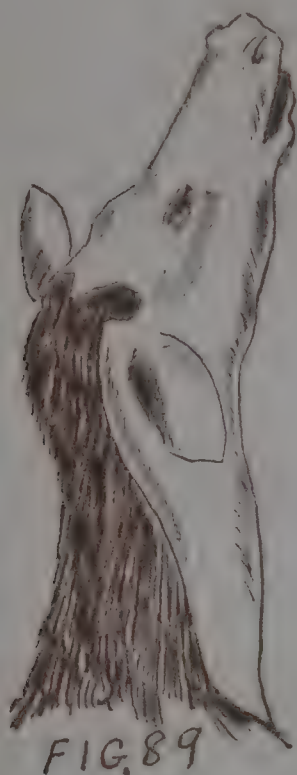
Figure 87 shows the ear partly skinned on the back side, and figure 88 shows the ear turned inside out with the cartilage still attached to the front side. You can now easily peel the cartilage from the front part of

the ear skin. Do not be alarmed at the prospects, for you can really do this work much easier than you expect.

The Face

It will take some patience and time, working around the muzzle. Take a sharp knife and pare all of the cartilage away from the nose. Make it **very thin**. Now invert the lips and cut the cartilage out, but do not destroy the membrane forming the inside of the lips. Simply cut out the cartilage of the lips forming a sort of "pocket" by making a slit along the inside of the lips clear around from one side to the other about one-half or three-quarters of an inch from the edge, then the flesh can be pared away through the incision.

Do not neglect this work, for if you do not make the skin **thin** in these parts you will find that it will shrink away after mounting, but if the work is well done you will have no difficulty whatever with shrinking. With a knife and scalpel pare the cartilage and meat from the skin around the eyes; but do not cut the eyelids.



Fleshing the Skin

Now place the hide, flesh side up, over a beam and proceed to scrape the flesh and fat off the entire surface. For this purpose you will need a **fleshing knife**. If you do not have one, you can use an ordinary **carpenter's draw-knife**, which works very nicely after you have practiced with it a few times. After the hide has been properly prepared, the ears skinned, and the surface shaved down, etc., the hide or "scalp," when completed, will appear like **figure 89**. The scalp is now ready to be placed in the **PICKLE-BATH**, of salt, alum and water, which is fully described later in this book of lessons.

Care of the Skull

Now turn your attention to the **skull**, which you will find to be covered with muscles and flesh. Cut away all that you can with a knife, dig out the eyeballs and remove the tongue. The best way we know of to **thoroughly clean the skull** is by **boiling** it until all the meat is removed. For this purpose you will need a large tin vessel or iron bath, which can be placed over a hot fire. Do not place the antlers in the water, but just the skull, and boil it until all of the meat comes off easily. The skull will now be clean. If it is not convenient to boil the skull, then it will be necessary to clean all the flesh away with a knife, scraper, etc. This is quite a long, tedious job. Keep in mind, however, that you must get rid of **all of the flesh** in order to do this work right.

Before boiling, it is necessary to remove the brain. Cut away the back of the skull, exposing the brain, which you can easily remove by using a large spoon or similar instrument. You now have the **skull** in first-class condition for mounting, and the **scalp** is in the **pickle-bath**, being properly pickled so that it will keep forever.

NOTE—We wish to impress upon the student the necessity of thoroughly shaving the skin down before it is put in the bath. If you should put a skin of this kind in the pickle-bath **without removing the cartilage from the ears**, and without shaving off the flesh and meat, the chances are that it **would spoil**, but if you do the work well you can put hides in the pickle-bath and keep them for **months** and **even years** in first-class condition. You should also see that the hair has been washed clean and that all blood and grease is washed and scraped away, for it is not best to put a dirty skin in the pickle-bath.

LESSON NINETEEN

Mounting the Head

The materials used for mounting deer heads consists of **excelsior**, **potter's clay**, **papier-mache** and **sheet lead** for lining the ears, or you may use **papier-mache** ear linings. These are specially recommended, as they are made in moulds to the exact shape of the ears. It will be necessary for you to have certain blocks of wood, which we will now describe.

Center Board

The center board is the wood core around which the artificial neck is built. This is represented by "A," **figure 90**. For a deer, take a piece of clear pine, 2x4 inches, of the desired length. Cut out the base of the skull sufficiently large to receive the end of this center board as illustrated in **figure 90**. Place the center board into the base of the skull and fill in around it with liquid plaster-of-Paris, which holds the neck board firmly after it becomes dry. We usually put a bolt through the **skull** and **center board** at point "C," **figure 90**. This makes it doubly firm and we



recommend the use of this bolt. If the bolt is not used, then you should drive two or three nails through the front part of the skull into the end of the center board.

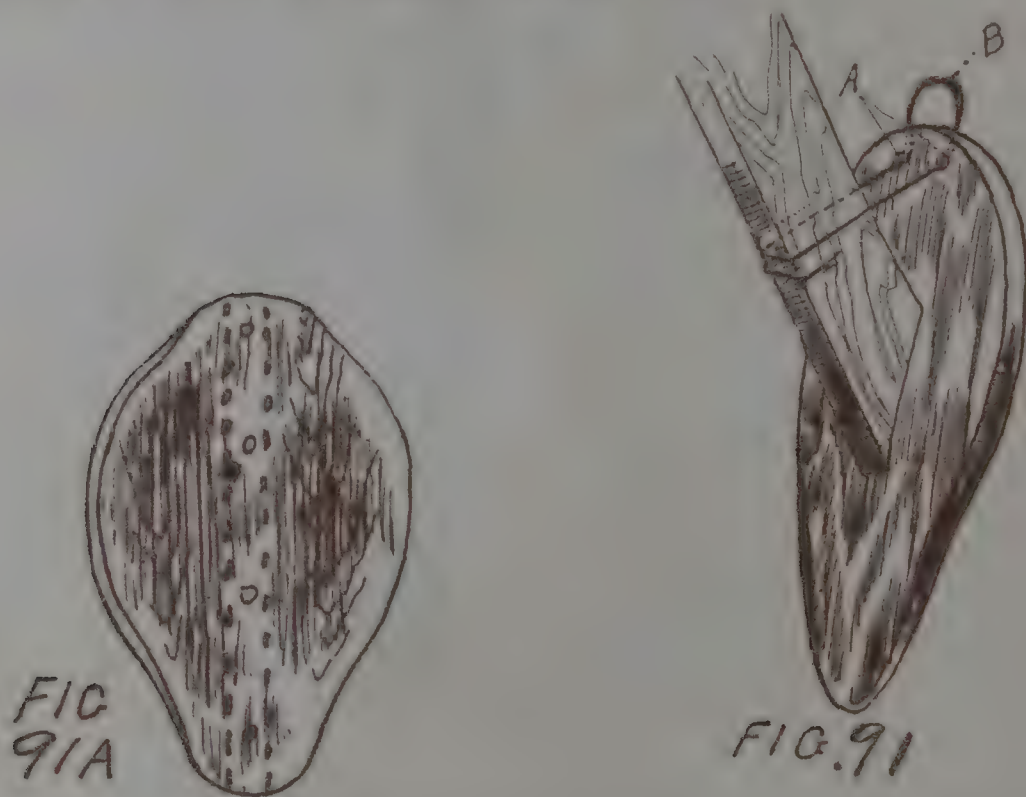
The Base Board

Now prepare a base board, which is shown in **figure 91A**. This represents the **correct shape** for the base board used when mounting a deer head. The shape remains the same for all deer, but it will have to be increased or decreased in size to fit the particular specimen that you are mounting. For an ordinary deer this board is about 7 inches high and 5 inches wide, but it would have to be much larger for an extra large deer head. Saw the lower end of the center board to the desired angle and attach it to the middle of the base board by using strong screws. The attitude and position of the head is determined by the angle used in attaching these two boards together. You can easily judge what this angle should be, after determining whether you want the specimen with the head mounted high or low.

Building the Manikin

After you have the center board attached to the skull and the base board put in position, you are ready to build the artificial neck. Before wrapping the neck you can put on the hanger, if you desire, which we

now describe, and which adds much strength to the specimen. Drill two holes through the base board at "A" and "A," figure 91. Pass a heavy wire, about No. 8 or 9, through these holes, clinch it around the center board as shown in the drawing. Bend the outer end of the wire upward, forming the loop "B," which is used for hanging the specimen on the wall, providing you do not place the head on a shield. It is not absolutely necessary to put this kind of hanger on, for you can use a hook eye if you prefer, although we believe that this hanger is more desirable on account of the extra strength it gives the head. If you mount the head on a shield no hanger is provided at this time.



You will now proceed to make the artificial neck by building excelsior over the center board. Use heavy, strong cord for winding and proceed to build up the neck of proper shape and size to correspond with your measurements. Be sure and wind the artificial neck **firmly**, and give it a graceful curve, which curve should be downward on both the under and upper sides. **Do not make the neck too large.** This is a fault that is common to the beginner.

Now take wisps of excelsior and place them in and around the nostrils and wind them firmly in position, as shown in figure 92. After this has been done the manikin will be completed except applying the clay, and will appear like figure 92.

While doing this work, you have at the same time thoroughly prepared the skin and have it ready to put into position. If the skin is now ready, you may proceed to finish up the manikin, which is done by covering it over entirely with potter's clay. Mix the clay well, until it spreads easily, and then apply it with the hand. Cover the neck as well as the head with clay. Replace all the flesh of the skull and face with clay and mould it into natural shape, so that it appears as it did before you removed the flesh from the skull. This requires **time and patience**, but you will succeed well the first time you try it.

Fill the eye cavities with clay, having them about **level full**.

Preparing the Skin for Mounting

Remove the skin from the pickle-bath, hang it up and allow the pickle to drain out. Now wash the skin through several clean waters to remove the salt and alum. The skin will likely be a little stiff and hard from the bath. It is **absolutely necessary** to shave it down again and work it over until it is perfectly soft on all parts. If it is well pickled it will appear **white**, but if it is not pickled sufficiently, you will notice **bluish spots**, which means that you should leave it in the pickle a few days longer.



In shaving the scalp, place it over a beam, **flesh side up**, and go over the whole interior with a **fleshing knife** or **currier's knife**. Pare it down around the eyes, lips and nose again and be sure that it is **thin** and **soft** every place, otherwise it will not stretch out to its full size.

You must now **line the ears**, using either **sheet lead** or **papier-mache** ear linings. We prefer the ear linings, but the lead can be used if you cannot get the ear linings. Cut out the sheet lead the required size and bend and pound it into the shape of the ears, which will be similar to **figure 94**. Cover the ear skin with **arsenical paste** and invert it so that the hair will be outside again. Place the ear lining in each ear and fill in around the base with **potter's clay** and work some of the clay into the ear alongside the ear lining to fill out and give a natural appearance.

Now spread the skin out and paint over the **whole interior** with **arsenical paste**. Be sure that you paint it well at the edges and around the base of the ears, eyes and nostrils.

Placing the Skin on the Manikin

You should try the skin on the manikin occasionally while you are building same, so that you will be sure it fits. Now draw the skin up over the face and bring the skin together on the neck and hold it together with a few temporary stitches. Adjust it carefully and see that it fits in every place. If your manikin needs building up or if it needs the muscles moulded in any place, put them in at this time, using potter's clay.

Now sew up the incision on the back of the neck. Bring the skin up tight against the antlers, and then sew the seam down the neck until you come to the base board. You should now tack the skin to the edges of the base board as shown in **figure 95**. Stretch the skin tight so that there will be no wrinkles.

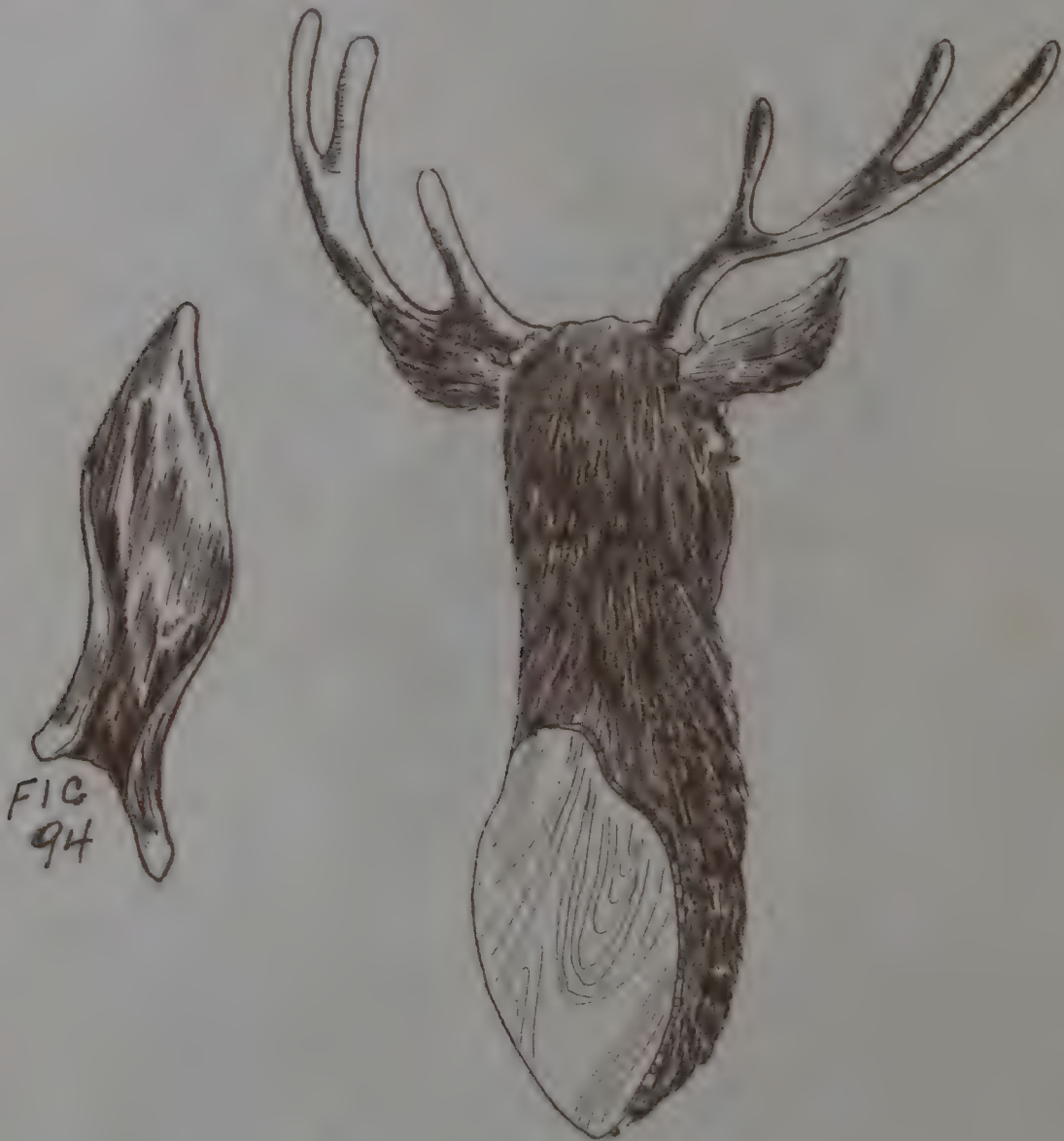
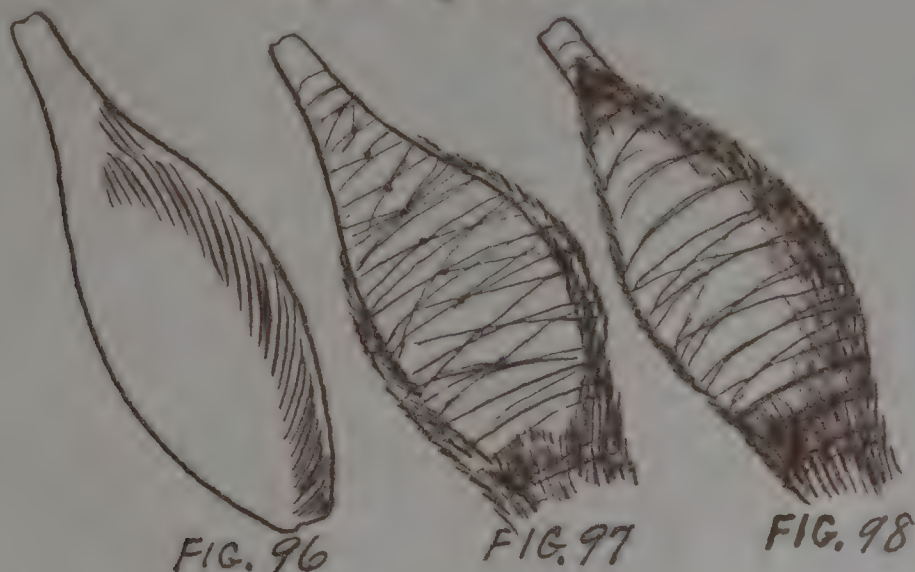


Fig. 95

Fill the "pockets" of the lips with plenty of potter's clay and mould them down into position. If you do the work well at this point and if the lips have been properly thinned, it will not be necessary to sew the lips together, for the clay will hold them perfectly in position after they are dry. Take plenty of **time** and use exceptional **care** with the lips and nostrils and see that the face is of correct form and shape. You can mould the face through the skin by moving the clay with the hands.

Before sewing up the skin on the head, you should place a quantity of clay under the base of each ear to hold them in position. Your ability will be tested in shaping the head. In moulding the muscles, make them appear exactly as in life.

Adjusting the Ears



The skin of the ears must be held tightly against the lining until they become dry. For this purpose you can carve out blocks of wood shaped like **figure 96**. Place them in the ear and wind soft cord about the ear and block as shown in **figures 97 and 98**. These blocks are to be left in until the specimen is thoroughly dry. Instead of using these ear blocks, you can bend stiff cardboard to fit the inside of the ears and wind firmly in place, but you will get best results by using the ear blocks.

Now comb the hair with a furrier's comb and brush it well until it lies smoothly in position. If the hair refuses to lie down nicely, mix a thin **flour paste** and brush it into the hair, which will assist you in making the hair lie smoothly. This paste will be brushed and combed out when the hair is dry. Now hang the head away for a week or ten days, or longer, until it becomes **hard and dry**, when it is ready to finish.

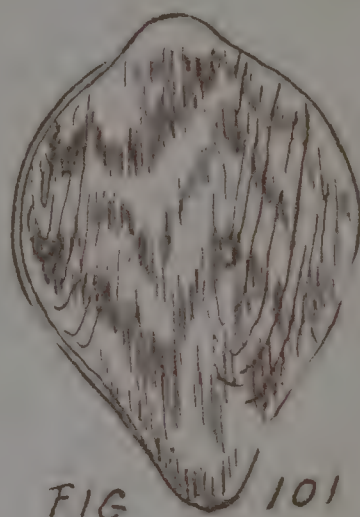
Finishing the Head

Dig out the loose clay, if any, around the lips, nostrils and eyes and clean out all loose clay dust. You will now fill in nostrils and eye cavities and around the lips with wet papier-mache. Use a small round pointed stick and sink the nostrils deep. Set the eyes in a bed of papier-mache, having them exactly in the right position. When you put the skins on the head you must be sure and have the eyes of the same height. If you postpone setting the eyes until the specimen is dry, you will find it necessary to pack the eye cavities with wet cotton or paper until the eyelids become soft, for you cannot set the eyes if the lids are hard and dry.

After the eyes are set, allow the specimen to stand until the papier-mache has become thoroughly dry, then paint the lips and interior of the nostrils with black wax and also fill in around the edges of the eyes with the black wax. Afterwards polish the glass eyes until they are thoroughly clean. Mount your specimen on a permanent oak shield. It is then ready to hang on the wall.

If your first specimen is at all good, you should **congratulate yourself**, for you deserve it. **Do not be discouraged**, for Taxidermy, the same

as other arts, requires practice and patience. After you have mounted a half dozen game-heads, you will be able to do the work right—likely better than many professional Taxidermists of years' experience, using the old and unreliable methods.



It is very important to have the **base boards** of correct shapes. Figures 99, 100 and 101 show the right shapes for elk, deer and moose. The size is governed by the particular specimen you are mounting.

LESSON TWENTY

SPECIAL INFORMATION

Supplying the Skull

Sometimes much of the skull is missing, and it is then necessary to build up an **artificial one**. If the antlers are connected by a small portion of the skull, a piece of pine wood of proper length should be screwed to the under side of this part of the skull so that it will extend down, forming the top of the face. The complete head is then built on this board, from excelsior, which is afterwards covered with clay before the skin is put on. If the antlers are **separated** and all of the skull is gone, they should be arranged as follows: Drill a hole into the base of each antler several inches deep and force an iron rod tightly into these openings. The outer end of these rods are fastened to a **center block** by the use of threads and burrs. You should use care to get the antlers the right distance apart and at the proper angles. The artificial head and neck is then built up entirely on wood center blocks.

The Antlers

It is not proper to give the antlers a **high polish**, for everything should be as near nature as possible. If the antlers are dirty and greasy, simply wash them with water and soap and allow them to dry, after which you can give them a very light coat of boiled linseed oil. If, however, the antlers are **white** and **bleached**, it is necessary to **restore the natural color**, which is done as follows: Mix equal parts of turpentine and boiled oil together and then stir into this a small quantity of **lamp black** and **burnt sienna**. Paint the antlers with a coat of this mixture

and immediately wipe it off with a soft cloth. If the antlers are not dark enough with one application, give them another coat and so on, until you get the desired shade.

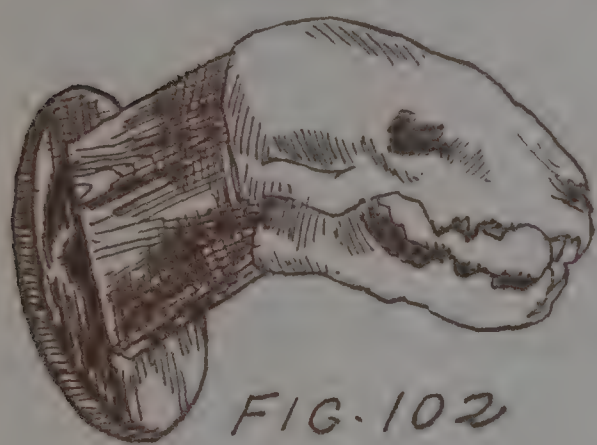
If the horns are very rough and cracked, you should sand-paper them slightly and then give them a coat of filler. The best filler we know of is a mixture of corn starch, boiled linseed oil and Japan dryer. This will fill the cracks, and after it becomes dry you can restore the color to the antlers. As stated above, experience alone will tell you how much of the color to put on. Hard antlers require a deeper colored paint than soft antlers, as the latter absorbs paint more quickly.

Antlers in the Velvet

Specimens are sometimes taken when the antlers are still in the velvet, and it is desired to mount the antlers, retaining the velvet. When the horns are **very young** and **soft** it is almost impossible to preserve them in this way, for they are simply a mass of blood and cartilage. If the antlers are of some age, however, the velvet can be retained, providing it is taken in time, but when it commences to slip off there is no way to set it and save it, and the best plan is to remove all of the velvet, leaving the natural antlers.

To preserve the velvet proceed as follows: Prick the antlers all over with a sharp instrument such as the point of a knife or darning needle, then squeeze out the blood. A satisfactory instrument for pricking the antlers can be made by taking a few shingle nails which have been sharpened to a point and drive them through a piece of board or paddle. Then go over the surface of the antlers with the sharp points of the nails. After the blood has been squeezed out, cover the antlers with turpentine and allow them to dry for a day or two. You should then give them a coat of **arsenical paste**, which preserves the velvet. After the paste becomes dry, wash it out with warm water, then allow the velvet to dry thoroughly, after which you should go over it with a stiff brush. It will then be in nice condition.

Other Game Heads



The heads of such animals as wild cat, wolf, bear, etc., make very nice ornaments when mounted and set on panels. You should proceed just the same in mounting these heads as you did when mounting the deer heads. **Figure 102** shows the center board in position. **Figure 103** shows the manikin completed and covered with clay ready to receive the skin. For placing the skin on these heads follow the instructions given in the preceding lesson. You may also mount the heads of birds and

fish on panels—they make very attractive ornaments if the work is well done.

There are a great many positions in which the various heads can be mounted. If you wish the head turned to one side, you should adjust it in this way when you attach the skull to the center board. Then build the artificial neck with a curve to correspond with the desired position. A little practice enables the student to select and construct a large variety of graceful and attractive positions.

Open Mouths

If you desire to mount specimens with mouths open, you must, of course, adjust the jaws in proper position. While making the manikin the jaws are held open by setting the joints with plaster-of-Paris. After you have the skin on and it becomes thoroughly dry, you can finish the inside of the mouth. Carve a tongue from pine, place it in position, setting it in a bed of papier-mache. Fill in the back of the mouth and around the lips and roof of the mouth with papier-mache, making it as smooth as possible. Also see that the inside of the mouth is the same shape that nature gave the animal. The whole interior of the mouth should be waxed and painted to the desired shade, or better, you should use **pink wax**, which is applied with a brush, in a melted form. The lips themselves should be painted black or finished with black wax.

See Book Seven for additional instruction on open mouths.

It is often necessary to patch the scalp or supply longer necks. For this purpose you can use parts of different scalps of the same kind. Often you may get two scalps, one of which has a good face and the other a good neck, and by putting them together you can make a first-class head. If there are any spots where the hair is missing, you can either patch these places or glue on the hair from other parts of the specimen. This should not be undertaken unless the bare spots are small.

Shields

A few years ago it was the custom to mount heads without placing them on shields, simply hanging them on the wall by a hanger attached to the baseboard. This has changed, however. Most every one desires their game heads mounted on nice attractive oak shields or panels. These come in many shapes and sizes and certainly add a great deal to the appearance of the specimen. We unreservedly recommend the use of shields and panels.

LESSON TWENTY-ONE

The Pickle-Bath

The **pickle-bath** is one of the most useful and important helps that a Taxidermist has at his command. It is an **absolute necessity** when mounting large game-heads and large mammals. The pickle-bath, when properly prepared acts upon the skin in such a way that the glue is destroyed and the skin actually **pickled**. If the work is well done the skin is in condition to last for centuries, and it is therefore **important** to know exactly how to make the **pickle-bath**, and to prepare the skin so that it will be **pickled to best advantage**.

Study this lesson very carefully so that you will **know** exactly how to make the bath at any time, without reference to the lesson. The bath is made from **water, salt and powdered alum**.

Proceed as follows: Place on the stove a large boiler containing sufficient water to make the desired amount of pickle, and allow the water to come to a boil. Now stir into it 8 or 10 ounces of **powdered alum** for **each gallon** of water. Continue to stir until the alum is dissolved. Now put in **common salt** and continue to stir the solution while it is boiling. **You cannot get too much salt in the solution. Put in more salt than will be dissolved.**

After the water has taken up as much salt as it will, you can remove the solution from the stove and allow it to cool, when it is ready to receive the skins. A wood keg or barrel is best for preserving skins, although a large earthenware jar is also excellent for this purpose. **Do not use a tin or iron vessel.**

Pour the pickle into the barrel, then put in about an inch of salt on the bottom, for as stated above, it is impossible to add salt enough to injure the skins. Now take the skins which have been properly prepared and place them into the pickle, being sure that **all parts are covered**. It may be necessary to use a weight to keep them under the liquid. It requires from three days to two or three weeks to thoroughly pickle a skin, depending entirely on the **size and condition** of same.

If the hair is loose, or slipping slightly, it is then necessary to put the skin into a **hot pickle-bath**, as this tends to **set** the hair. In fact, this is about the only method of setting the hair that we know of, and even this will not work if the skin is in very bad condition. By the term "hot" we do not mean "boiling." This would, of course, scald the skin and cause all of the hair to come off. The temperature should be about 150 degrees Fahr., or just so the hand can be held in it without burning.

Skins that are prime can be put in cold baths safely. You can put as many skins of different kinds in a bath at the same time as you desire, but if they are to be left in for several months, you should occasionally make a little fresh solution and pour it into the barrel, as the skins will take up part of the salt and alum, and by continuing to use the bath it will lose its strength, but there is no reason why you cannot use the same pickle month after month.

In warmer weather we recommend larger quantities of alum than in cold weather, but at all times have plenty of **undissolved** salt on the bottom of the barrel. As we have already explained in the foregoing lessons, you **must** not put the hide into the pickle until it **has been prepared**, by skinning out all parts, including the ears, and then shaving it down carefully and removing **all the fat and flesh** entirely down to the grain of the hair. The pickle-bath **will not act from the hair side**, neither will it act **through the fat or flesh**, so you will see the **great importance** of having the skin **right** before you put it in the bath. If the ears are not skinned and if some parts are not shaved down the hair is sure to slip. It is essential to have a **fleshing knife or currier's knife** in order to prepare the skins properly.

If at any time you see white crystals forming on the hair, this means that the bath is too strong and you should weaken it by adding a little water. The danger, though, is that the solution will be **too weak**, rather than **too strong**. If it is too weak the skins may spoil and the hair slip off, and if too strong the skins may be burned and become stiff and unwieldy. The surest way to get the bath right is to use a Taxidermist

salinometer. This instrument is used for testing the strength of the pickle. If it is used the bath should test 75 degrees as shown on the Hoehn salinometer. This instrument can be bought from any dealer in supplies, or we will send same to you for \$1.60, prepaid.

When ready to mount skins that have been in the pickle-bath, it is necessary to wash them through many waters in order to remove the chemicals. Then shave them down again until they are perfectly soft and until you can easily stretch them to their natural size. When the skin has been properly pickled and shaved, it will appear white and uniform in color all over the interior. If it appears white in places and bluish in other places you will know that the bluish parts have not been thoroughly pickled, and you should perhaps shave them down a little more or put the skin back in the bath for a time longer.

Important

Skins that are to be tanned for rugs and robes should **NEVER BE PLACED IN THE PICKLE-BATH**, for the alum hardens the skins and it is then very difficult to tan them properly. The tanning is an entirely different process, as described in a later lesson. The pickle-bath is used only for hides that are to be mounted.

Mounting Game Heads Over Papier Mache Manikins



Another splendid method of mounting deer, elk and moose, and other game heads is over forms that have been cast in moulds made from the natural heads. The student can hardly expect to make these casts himself, unless he has much work and is in the taxidermy business extensively.

We have and carry in stock for our students' use accurate manikins for all sizes of deer, elk and moose. If you get a particularly fine head and want to be sure of a perfect mount before you have had enough experience to make the manikin as instructed in this book, then it will pay you to secure the ready form from us.

The natural antlers are attached to the form with screws through a small portion of the skull, and the skin is placed over the ready manikin without any changes, except possibly a little clay here and there to fill up any deficiencies. These forms are described and priced in our supply catalog.

LESSONS IN TAXIDERMY



*A Comprehensive Treatise on
Collecting and Preserving all
Subjects of Natural History*

BY

Prof. J. W. ELWOOD, B. S.

BOOK VI---Lessons 22 to 26

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LESSON TWENTY-TWO

How to Skin Fish

In the fish world we have a wonderful variety of forms and sizes, as well as colors. The Taxidermist will spend much time with this class of work if he once commences, and yet, as a whole, the results will not be entirely satisfactory. The process of mounting fish is simple, yet there are many little things that prevent the mounted specimens growing in great favor with the public, not the least of which is the fact that the beautiful colors and tints of the living fishes are often irreparably lost in the mounting.

When ready to mount the fish (a bass is a good specimen for the beginner), cut papers to the exact shape and size of the sides and place them firmly over the scales; the natural mucus will hold the paper in place and prevent the loosening of the scales. If the paper should not hold securely, cover the body with a solution of gum arabic, which will do the work.

The best plan is to go right to work on the fish as soon as it is caught, for in this way more natural color can be retained than by allowing the specimen to become old and stale. If the work cannot be done at once, however, but **within a few hours**, the fish should be packed in ice so that it will be perfectly fresh when the work is started.

It often happens, however, that the work cannot be done for a few days, and in this case it is necessary to treat the specimen in a different manner. Skin the fish out according to directions given in this lesson. After the skin has been carefully prepared, place it in a bath of strong salt and water. Do not use any alum or anything except common salt and soft water. In this way the skin can be kept for quite a time without losing its colors badly.

Some Taxidermists remove the skins and allow them to become dry, but they are always very difficult to relax, and always become very dark in color. For this reason try to get to work on these specimens just as soon as possible.

If it is necessary to carry a specimen for some time and you cannot get either ice or salt, then pack the fish with wet moss, leaves, or something of this kind. It does not take long for the scales to become very loose, and when they are once loose, you might as well throw the specimen away.

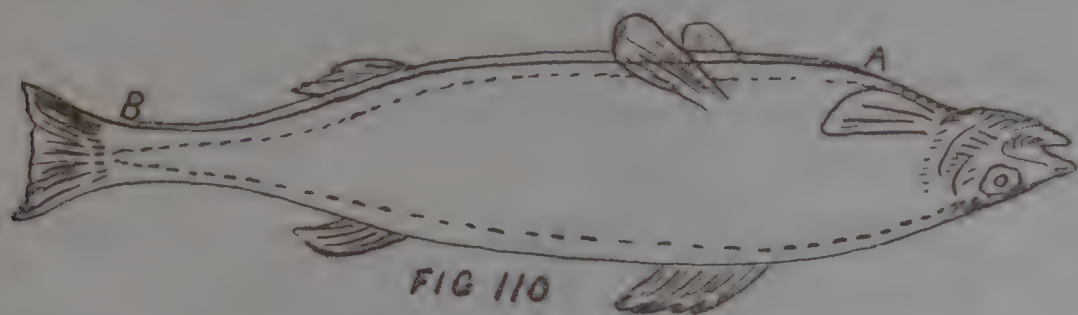
Removing the Skin

If you want to mount the fish **whole**, it is necessary to make only **one incision**, and that is straight down the belly, as shown from "A" to "B," figure 110. If you are to mount the fish showing **only one side of it**, you should then make a cut completely around the fish on one side, as shown by the **dotted line in figure 110**.

After you have made the incision down the belly, start to skin right and left, taking your time so that you will not make any cuts through the skin. You will not find it a hard matter to separate the skin from the body. You should continue until you reach the back. Cut the body away at the tail and also skin it out along the back and detach it at the neck.

It is a good plan to lay the natural body to one side so that you can take some measurements from it a little later. After you have the skin entirely removed from the body, you should then carefully proceed to clean away **all fat and flesh from the interior**. It is very important to get **all the fat** off the skin, for if you leave it on it is sure to soak through scales later and discolor them. Use a skin scraper or fat scraper and work carefully until you are sure the fat is all off.

Open up the **back** of the skull and **remove the brain** with a brain spoon.



Now take a pair of scissors and cut out the gills and throw them away. Separate the skin from the sides of the head as far as you can and remove all the flesh possible. Open up the mouth and cut out all the cartilage and flesh that you can reach. You will find it almost impossible to remove the skin from the fish's head, for the skin adheres tightly to the bone. This being the case, you must give the head a great deal of attention in order to get all the fat and flesh removed.

As you proceed with the work be sure that you do not split the fins in any way, but keep them whole. If necessary, dampen them occasionally so that they will not become dry and cracked.

Remove the eyes from the outside of the specimen, using a hooked wire for this purpose. If you are going to mount the specimen at once you can immediately apply the arsenical paste as a preservative. Be sure that you have the whole interior covered, and also introduce it liberally around the head, into the mouth and eye cavities. If, however, you do not want to proceed with the mounting for some time, then place the skin in a salt brine as directed above.

It will be necessary at all times to work carefully so as not to disturb the scales. If, however, a few are removed, you can put them back in place with glue. You will not be able to get a perfect skin the first time you try it, but with a little practice you can prepare them as well as the most expert Taxidermist.

LESSON TWENTY-THREE

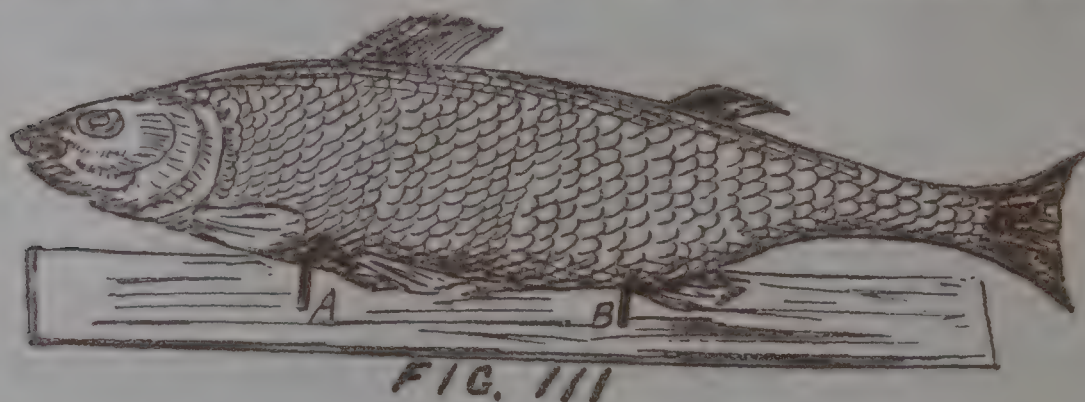
Mounting Fish

There are several methods advocated for mounting fish. Some persons claim to have methods that will keep the natural colors from fading, but we have investigated every known method and are positive that nothing has ever been discovered that will retain the beautiful tints and sheen found on living fishes.

The method that we give you for mounting fish is the simplest and most satisfactory that we have discovered, and we use this method in most all of our own commercial work, which is well known throughout the country.

In general the mounting of fish is similar to the mounting of other animals, inasmuch as an artificial body is made and inserted in place of the original one.

Take a soft piece of pine of sufficient size and carve it out in the general shape of the fish you are mounting. If you have a good saw, draw-knife, etc., you will not have any difficulty in getting the block of suitable shape. It is not at all necessary to make it accurate, but it should be in general the same size and outlines as your fish, and it should be cut down at the front end so that it will fit into the brain cavity.



You are now ready to build the **accurate body** on this block with the use of potter's clay. Have the clay in nice working order and cover the entire block with a **heavy coat of clay** and proceed to **mould** it into shape with the hands, until it looks like and has the same measurements as the natural body which you have removed.

When you have done this to your satisfaction, you are ready to put the skin on the manikin. If you have not already done so, you should now thoroughly **preserve the skin** on the inside with a heavy coat of arsenical paste. Fit the skin over the clay manikin and then with the hands **mould the skin** into an exact reproduction of the living fish. This is not at all difficult to do after you have practiced the work a few times.

If necessary, put on additional clay, or take out some, in order to secure the **right size and shape**. At all times have the fins **wet**, so that they will not shrivel up and split.

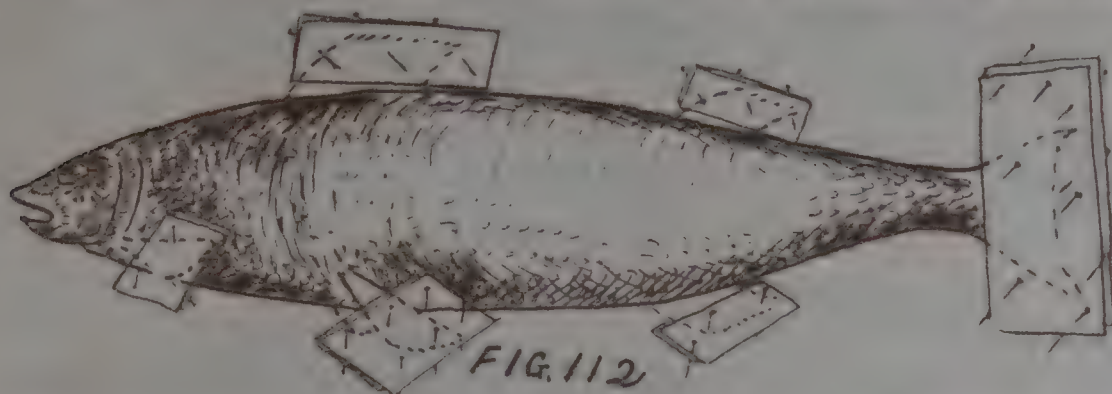
Now sew up the incision, using stout linen thread, and mount the fish on a temporary base. You can do this by inserting small rods into the fish in two different places along the belly line and then set these rods into a base, as shown in **figure 111**. If you desire, you can set these rods into a wood block before you start to apply the clay. This is just as satisfactory as putting them in later, and some persons prefer it.

Now wet the fish all over and soak off the paper that you have pasted on the sides. Go over the entire fish with a sponge and water and wash off the foreign substances until the fish is absolutely clean. Now sponge the fish all over its entire surface with a light application of turpentine.

You will now **spread the fins** into proper position and fix them so by pinning cardboards on both sides, as shown in **figure 112**. These cardboards should be left in position until the fish is **thoroughly dry**. We now come to the most difficult part of fish mounting.

Restoring the Colors

While many Taxidermists do not attempt to paint mounted fishes, we believe that anyone who expects to mount for the public or is anxious to represent nature in detail should acquire skill along this line by practice. The only way that the colors may be restored is **by the use of paints and brushes**. Study the coloring carefully from living specimens, and reproduce them to the best of your ability. It is not in the province of a work of this kind to enter into the subject of mixing paints and applying them. A good text-book may be secured from any dealer in artists' sup-



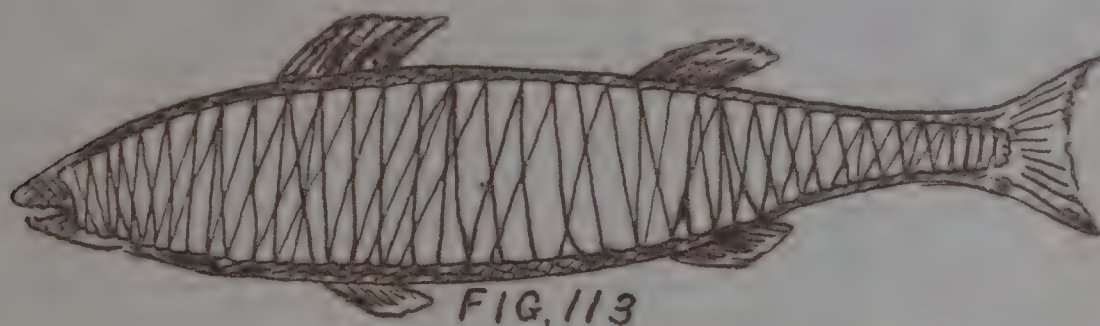
plies, and will so instruct you that within a short time you can mix the desired colors in a satisfactory way. The skill in applying the paint must be secured by actual practice.

It is probable that many of our students will not care to mount a sufficient number of these specimens to warrant a study of painting. In this case we recommend that the entire fish be given a thin coating of good varnish as soon as it becomes dry. This will assist greatly in preserving the colors, and also prevents the scale from falling out.

LESSON TWENTY-FOUR

Making Medallions

Many persons do not care to mount the whole fish, but simply put up one side of it and attach the back side to a shield or panel which is hung on the wall. In order to do this work one side should be cut out as shown by the dotted lines in figure 110.



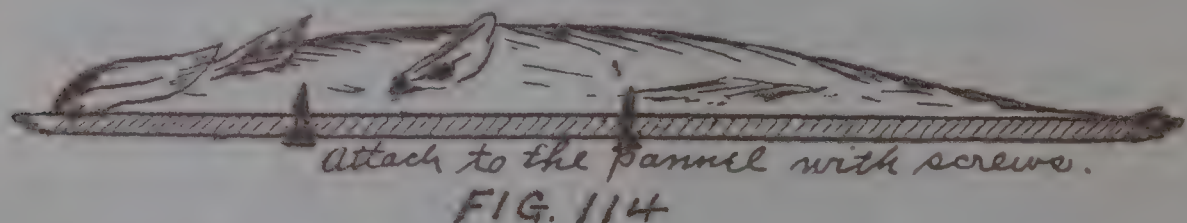
You then proceed to skin the fish exactly as directed above, and after this is done you build a manikin and then sew the skin on the manikin as shown in figure 113. A study of this diagram will assist you in putting up fish in this way. It might be well to add, however, that the board on which the fish is mounted must be cut to the exact size along

the edges so that the outline will appear correct after you have the skin sewed to the manikin. If you prefer you can use a flat base board cut the proper shape and then build the rest of the manikin from clay. **Figure 114** shows you how to attach the fish medallion to the shield with screws.

When fish are mounted into medallions in this way they are finished and painted just the same as though they were mounted whole.

Another Method of Mounting Fish

Another method that is in use and which is entirely satisfactory is to construct the body from excelsior, wound firmly on a wire frame. Cover this with clay the same as you do the pine block center-piece. We never use the excelsior manikin unless we wish to give the specimen a curve, when this method is employed. For general practice we recommend for your use the pine block, with which we believe you will get uniformly better results.



An old method of mounting fish was to skin them out along the same lines that we have mentioned above and then to sew them up and stuff with sawdust or something of this kind, but the work was never satisfactory and we do not recommend its use.

Setting the Eyes

After the fish has been completely mounted, you are then ready to set the eyes. The color and shape of fish eyes differ somewhat from ordinary glass eyes and you should have the special fish eyes in order to get best results. Fill the eye cavities with clay or papier-mache and insert the glass eye from the outside. You will have to use considerable care in order to get the eyes adjusted so that they will be in correct positions.

Be sure that they are not set too deep and that both the eyes are looking the same direction. You should use a little white wax to fill in around the edges of the eyes if the eyelids do not fit up snugly.

You may desire to mount a fish with open mouth, and if so you should hold the mouth open with a small ball of tow until dry, when you can finish the interior with wax.

We know that the student can perform the actual work of mounting fish with greater satisfaction after just a few efforts. The mechanical work is not difficult, and if the above instructions are followed he will have a fish that is perfect in design. The only **real difficult matter** is to restore the colors, which must be done with paints, as stated earlier in these lessons.

Use your own judgment in the selection of position. It makes a very attractive piece of work to mount a fish in a curved position as though it were swimming or fighting after it has been hooked. For choice specimens we recommend that they be mounted in glass cases so that they will not become soiled by dust.

A beautiful design can be made by mounting the specimen in a glass case with painted background to represent a river scene. The student can of course devise many interesting groups and positions for his specimens.

Outside of the restoration of colors, we believe you will be highly pleased with the results obtained in fish Taxidermy.

LESSON TWENTY-FIVE

Mounting Eels, Sharks, Etc.

Eels

In mounting eels you should follow the general instructions given for mounting fish. The incision should be made down the belly line, and the specimen skinned out entirely in all parts. You will find a great deal of **fat**, which should be carefully scraped away.

Construct the artificial body on a wire frame and cover it with excelsior, then cover the excelsior with clay and insert the body, passing the wire into the skull cavity. You can then mould the specimen into its graceful lines by working the clay with the hands. We do not recommend the center board, for you would no doubt wish to give the specimen certain curves that the center board would not permit. These specimens are usually mounted on flat oak bases and finished with a coat of varnish.

Another method sometimes employed in handling eels is to **make no incision in the skin whatever**, but to peel the skin off the body, removing the body **through the mouth**. In order to do this, the mouth should be opened **wide** and the body detached at the base of the skull. By working through the mouth you can soon project the body and invert the skin over the full length of the body, just as you might remove a glove from a finger. The skin is then cleaned and preserved, after which it is filled with hot sand and given the desired position. You can see that it would be an easy matter to shape up the skin into any desired form by stuffing in this way. We, however, do not recommend this, although it has been used with much success by certain Taxidermists. We think if you will adhere to the method of constructing the artificial body you will have best results.

Sharks

In mounting these very large fish, you will not vary materially from the methods given for mounting small fish. It is of course a **big job** to skin and mount a shark or fish of corresponding size, but if you enter into the work with a determination and if you have suitable material, you are not going to make a failure.

Always use the **center block method** and build the artificial body on this block. Use excelsior, tow, etc.

When you have the artificial body of the proper shape and **almost as large as the natural body** which has been removed you cover it **entirely with potter's clay**.

It is necessary to have a good supply of clay and to work rapidly so that the clay does not become dry, for you will want to adjust it through the skin after you have the skin in position.

The head is finished in the usual way, inserting the proper glass eyes and restoring the colors about the head by the use of oil paints.

After the specimen is mounted it should be given a **heavy coat of turpentine**, then allowed to dry. After this is done, you proceed to touch it up with oil colors where needed. Not many of our students will have opportunities to work on these specimens, so we do not give extended instructions.

LESSON TWENTY-SIX

How to Skin and Mount Reptiles

As a rule this part of the art of Taxidermy possesses little attraction to the student. At first the thought of handling the serpents, etc., is more or less distasteful, yet after performing the work a number of times this is forgotten. This class of specimens attract much attention and are not particularly difficult to mount.

Skinning Serpents



There are two distinct methods of skinning snakes. We shall mention both, but recommend number two for general use, as it affords more opportunity to reproduce the exact shape of the body.

First Method: Open the mouth to the fullest extent and disconnect the spine at its juncture with the skull. With the scalpel cut through the flesh and membranes entirely around the throat on the inside, using care that the incision does not extend through the skin. Now skin around the body for a short distance and force this part out through the mouth. Tie a strong cord to the body and attach the other end to some solid support. Now by inverting the skin it may be removed entire, the body passing out through the mouth. If necessary use the scalpel occasionally to separate the skin from the flesh. Go slowly when the tail is reached, as the skin is tender and apt to be torn.

Second Method: Make an incision from the head almost to the end of the tail, along the medial line on the belly, as shown in **figure 135**. Detach the spine at the head, when the skinning process is very simple.

The brain is removed through a small opening in the base of the skull. With the knife or scalpel cut away as much flesh as possible from the mouth and skull. You will find that the head cannot be skinned. Remove the eyes from the outside and insert into the cavities a quantity of arsenical soap, or dry arsenic. The tongue is of course removed.

Mounting Serpents

Scrape away the flesh from the interior of the skin, after which the preservative must be liberally applied. For all reptiles we recommend the arsenical soap, though the powder may be used with good results.

If you have skinned the specimen through the mouth, the skin should be filled with dry sand, which is removed when dry and replaced with tow or cotton. The mouth should be filled with papier-mache and the eyes inserted. As stated above, we do not consider this plan desirable, but mention it, as it is still used by some of our best workmen.

When the skin has been removed by the second method, an artificial body is used. Construct it as follows: Select a wire, the size depending on the specimen, the length of the body, from skull to tail. Around this wire build a body of excelsior. This body should be considerably smaller than the original one.

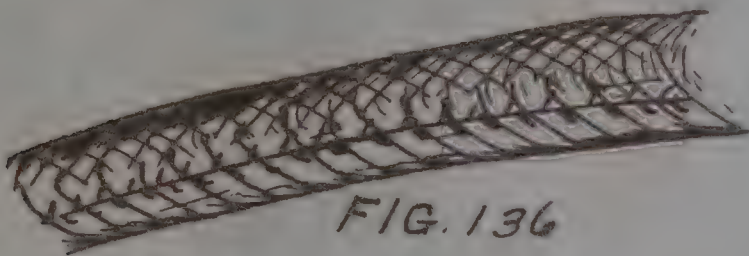


FIG. 136



FIG. 137

Now select two wires about two-thirds the length of the body, and around these wrap a small quantity of tow. These small forms are now placed along the sides of the body already constructed and bound together with tow and twine. A cross-section of the three bodies is shown in **figure 137**. The object in using the separate forms is to give the triangular shape to the mounted specimen. After this is done, cover the whole form with a heavy coating of potter's clay, rubbing it well into the excelsior. Add clay until the size of the original body has been attained. In mixing the clay, we recommend that a small amount of plaster-of-Paris be added. Insert the wire into the skull opening and sew the breast incision (**figure 136**), using heavy linen thread, which should be waxed. Set the eyes in glue, fill the nostrils with clay, hold the mouth closed with pins or by sewing, and bend the body into the desired position. In order that this may be done, be sure that the artificial body is wound loosely.

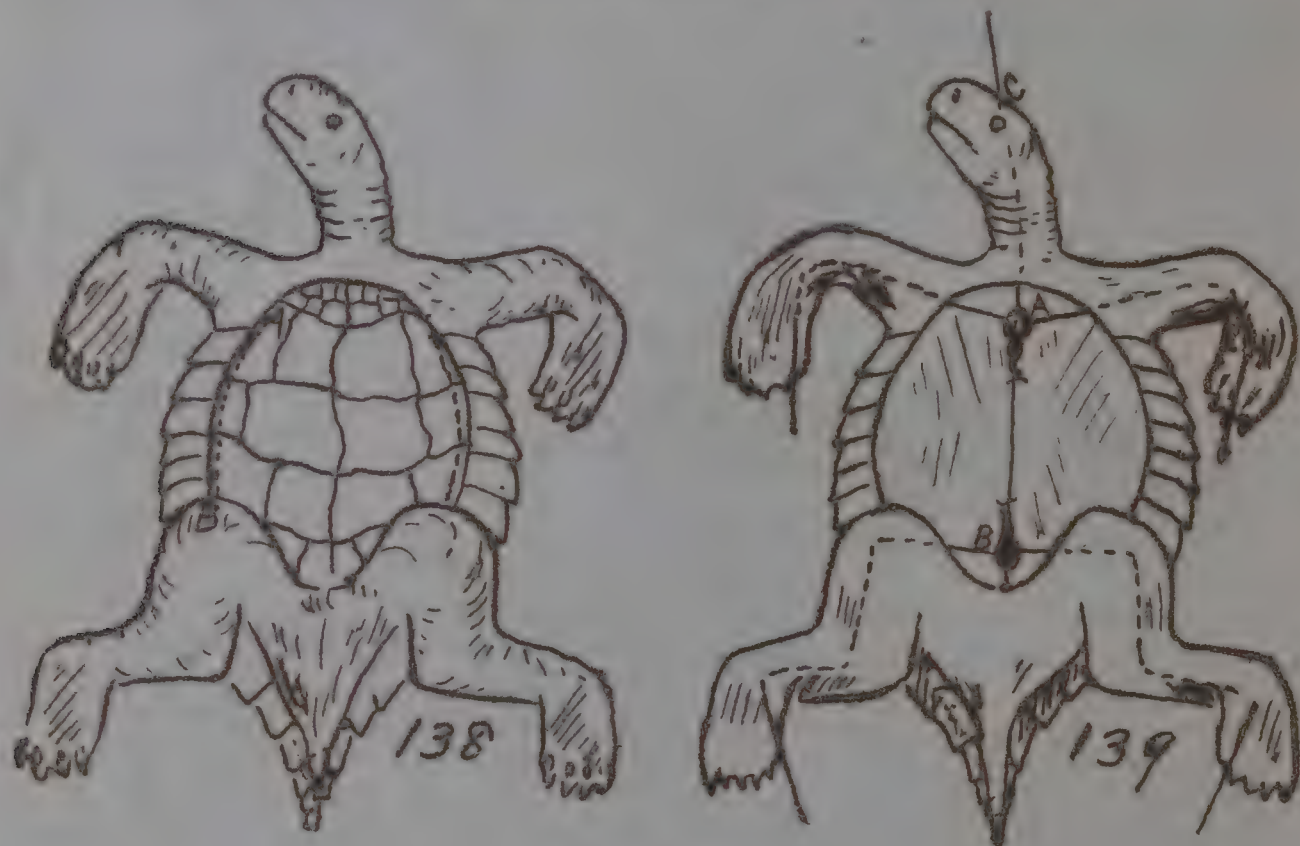
Now wash the specimen with turpentine, after which it is allowed to dry. Cover the body with varnish, and it is done. If you desire to attach it to a base-board or shield, attach two short wires to the artificial body before sewing the incision and allow them to protrude through the seam on the belly. These wires may be anchored to the shield.

With rattlesnakes and other venomous snakes, the fangs should be removed before any attempt is made to handle them. Use a pair of pliers to pull out or break off the fangs, after which apply water freely to wash away every trace of the venom.

All serpents may also be preserved in alcohol.

Frogs

The frog must be skinned through the mouth. Sever the flesh about the neck, from the interior, and literally turn the specimen wrong side out. Remove the body, leaving the spine attached to the skin. Invert the skin over each leg entirely to the foot and cut away the flesh. Preserve the skin with arsenic and alum. Now construct a wire frame from copper wire, using a center-piece, to which you will attach the four leg wires. Insert the wires and build up the leg muscles. The head wire must protrude from the upper lip. Fill the body with finely chopped tow and pin the lips together. Remove the eyes from the outside and replace with glass ones of the correct size and color. Mount in any desired attitude. After dry give the skin an application of good varnish.



Turtles

The mounting of turtles is considered somewhat difficult, yet we see no reason why any student cannot do the work with a fair amount of success after a few trials. The various kinds of turtles may be treated along the lines herewith presented.

The best method is as follows: With a hack-saw cut through the narrowest portion of the segments connecting the upper and lower shells, as shown by the dotted lines in **figure 138**. Cut through the skin to the shoulders and across the rear of the body, close to the shell, but leaving enough skin attached to sew later. The lower shell may be raised up while the specimen is being skinned. It is understood that the skin across the front or breast is left intact. Make an incision on the under side of the tail, and skin forward, separating the flesh from the upper shell until the throat is reached. Skin the neck to the skull, detach the head and remove the brain. The head will not be skinned. Remove all flesh, as so many times mentioned in these lessons, and skin out the legs. Now immerse the skin and shell in the ordinary salt and alum solution for several hours.

If not convenient to mount immediately, the skin may remain in the solution as long as you desire.

When ready to mount, construct a frame-work of wire, as shown in figure 139. The legs are built up with tow and clay, as is the neck. After this is done the interior should be filled with tow or excelsior, to its normal size, and the incision of the skin sewed. The edges of the plastron may be attached by the use of fine copper wire inserted through holes prepared with an awl.

Remove the eyes from the outside and set the artificial ones with glue. The lips should be held in place with papier-mache and glue. After giving the specimen the correct position, cover the entire outer surface with thin varnish.

Many use a center-block for large specimens. If the colors of the specimen fade, they may be restored with tube paints. The seams may be covered with papier-mache before the varnish is applied, which will improve the appearance.

Turtles may be killed by binding a quantity of cotton over the nostrils and saturating it with chloroform.

LESSON TWENTY-SIX--(Continued)

Mounting An Alligator

In mounting an alligator you start the skinning operation by making an opening incision at the throat and continue it along the middle line of the abdomen, all the way to the tip of the tail. The legs should be detached at the shoulder girdle and pelvis, and the cervical vertebrae at the base of the skull, so that the brain may be removed. Cut the skin away from the flesh all the way around the body and remove the carcass.

In shaping the legs in the larger specimen, form them with tow around the leg bones and leg irons, using clay wherever it will assist in developing shape. Prepare a narrow center-board of wood in which the leg irons are anchored in holes bored the proper distance apart, and then they are bent down and clinched with staples on opposite sides of the center-board. The neck iron is fastened to the center-board by means of staples and so is the tail support, the latter being a trifle shorter than the full length of the tail to allow for shrinkage.

Provide guy-wires to hold the tail down while drying, and around the tail iron at two points there should be securely fastened heavy wires doubled, designed to pass down through the pedestal to fasten beneath for the purpose of holding the tail flat to the ground, otherwise when the specimen is dry it will be sure to spring up.

When the entire skin is thoroughly poisoned, fill the body (on large specimens) with tow or straw, filling the skin out full and even. Be sure that the center-board is in the middle of the body and that the bend in the leg irons is correct. The filling on all sides and in every part should be uniform.

The sewing up of the opening should begin at the tip of the tail and continue to the ending of the opening in the throat. In the process of sewing, add or take away filling where necessary to produce a particular shape.

Potter's clay mixed with chopped tow will help in forming the different parts, were tow alone or other springy substance will not produce the desired form.

Arrange the legs in natural position, and to accomplish this successfully you must study a living specimen. The pedestal, which has been previously prepared, must have holes bored in it for the reception of the leg irons, which have been threaded and provided with nuts. By this means the animal is fastened securely to the pedestal. The guy-wires which are attached to the tail rod to hold the tail down may be fastened through the holes bored in the pedestal and held in place by staples underneath.

LESSONS IN TAXIDERMY



*A Comprehensive Treatise on
Collecting and Preserving all
Subjects of Natural History*

BY

Prof. J. W. ELWOOD, B. S.

BOOK VII---Lessons 27 to 30

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LESSON TWENTY-SEVEN

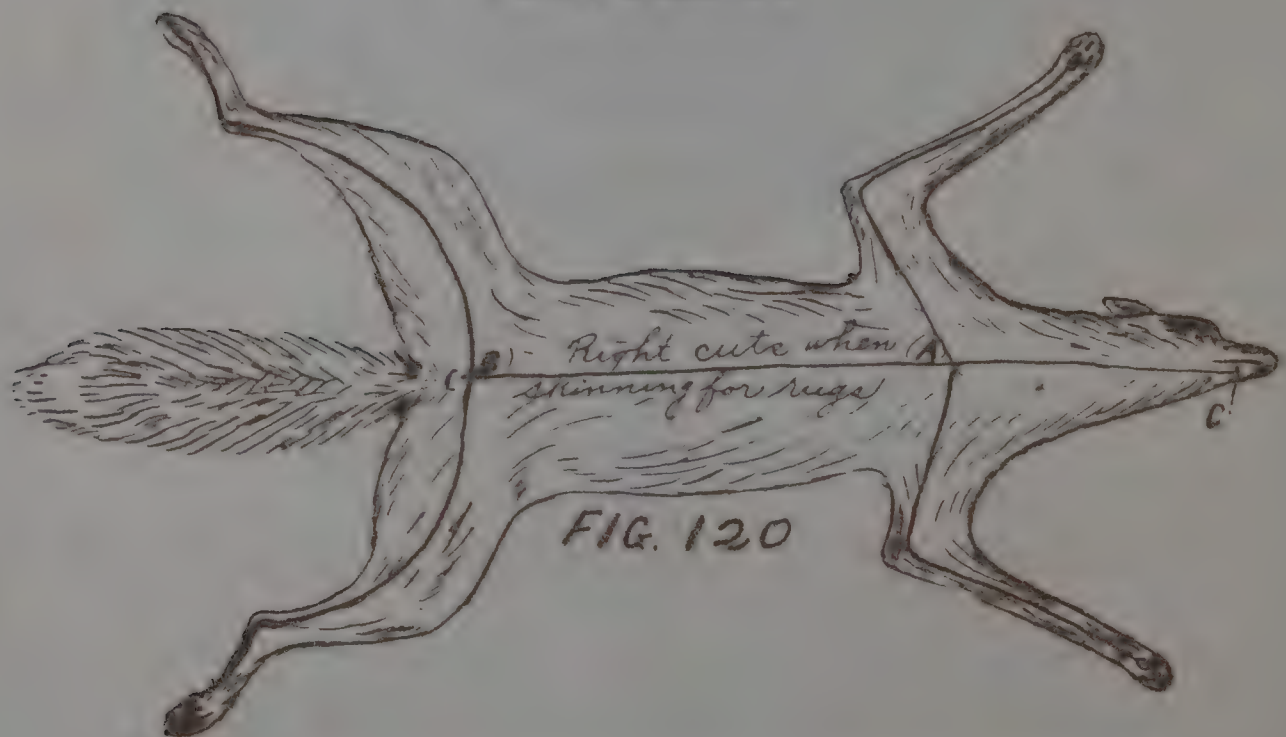
How to Tan Skins

Every collector should have a knowledge of at least one good method of tanning furs and skins in such a way that the hair and fur will not slip, and so that the skin itself will be nice, **soft and pliable**. We have given a great deal of time and investigation to the subject of amateur tanning and have come to the following conclusions:

Small and medium hides can be tanned with complete satisfaction by several processes, and this work can be done in the home without sending the skins away to a regular tannery. Very large and **heavy hides**, such as buffalo, elk, cow, horse, etc., are **very difficult to tan** without the special equipment and machinery found in a regular tannery. It does not justify one to buy this machinery, unless he is actually going into the tanning business. While heavy hides can be tanned fairly satisfactory by hand methods, etc., we wish the student to understand that he must not expect to make as good a job as the fully equipped tannery turns out. These skins are so heavy and difficult to handle and break up that it is almost impossible for one to do the work right by hand. We, however, give you instructions on how to get fair results even with heavy hides.

Small and Medium-Sized Hides

FIRST METHOD



We present a number of different formulas that have been proven and found satisfactory for all skins up to the size of a deer, wolf, small bear, coyote, and all smaller animals. The **first method**, which we explain in detail, is without doubt the **most satisfactory**, and we **recommend it to the use of our students**. We give the other methods simply because they have some good points, but under ordinary conditions the best results will be secured from the **first method**.

Choice skins and furs are usually secured while the collector is away from home on his outing, and he has neither the time nor opportunity to tan the skins while fresh. They must then be dried and tanned at some future time.

When small skins are secured, such as the squirrel, coon, fox, etc., they should be cleansed from all clinging flesh and fat and tacked to a flat surface after being thoroughly stretched, and covered with an application of common salt. They will soon dry, but will be hard and stiff. In this condition they can be packed together and shipped with no fear of injury. Larger skins should be tacked down flesh side up and literally loaded with salt. They must be kept in the shade, yet in a dry place, so that they will become properly cured. Apply the salt frequently if they do not dry properly after the first application.

Figure 120 indicates clearly the proper cuts to make when skinning animals for rugs and robes. First cut from "A" to "C" and then make the leg cuts from the points "A" and "B" entirely to the feet.

Relaxing Dried Skins for Tanning

When you desire to tan a dry, hard skin, either large or small, it must first be carefully prepared. In order to tan properly it is necessary to thoroughly relax the skin and make it soft before you apply the tanning liquor. If the skin is hard and dry and has considerable flesh on it, you should place it over a beam and go over the interior with a currier's knife, breaking up the hardest and roughest parts before you start to soak it up, and then put the skin in a vat of water and allow it to remain for a few hours.



Fig. 121

Examine it frequently and you will probably find that it is soaking up in some spots faster than in others. Remove it from the water and shave down the hard spots and then put it back in the water and allow it to soak again. Repeat the shaving operation on the hard places, thus helping the skin to soak up as quickly as possible. Do not leave the hide in the water too long, or the hair is apt to slip, therefore soften it as soon as you can. When you take it out of the water break up the stiffness of the skin with a fleshing knife and currier's knife while the skin is over a beam. If one part of the skin seems to get softer than the others, then you should simply soak the stiff end in water, leaving the soft outside, for

as stated above, you can very easily spoil the skin by leaving it in water until the hair slips, and when it does slip, there is no known method of setting it.

Some skins are so flinty that it is difficult to relax them by soaking in water. In such cases put sulphuric acid in the water in the proportion of 2 ounces of acid to 5 gallons of water. Leave the skin in until the flinty places become soft and spongy.

Nothing except good hard work and close attention will enable you to properly soak up a dried skin and get it in suitable condition for tanning. Whichever method you use in tanning, you should keep the following fact in mind: **A skin cannot be successfully tanned until it has been shaved down thin.** This is imperative. Not only the clinging fat and flesh must be removed, but you must actually shave the whole interior of the hide so that the tanning liquor can soak into the skin freely in all places.

More skins are spoiled by trying to tan them before they are ready than by all other means. In fact, the hardest work of all in tanning skins is to get them in good condition. Keep this in mind at all times, and **REMEMBER** that a hard, flinty skin can never be tanned until it has been soaked up and shaved down and made soft on every square inch of the surface.

On the other hand, care must be used with some skins, especially bear, raccoon and badger, not to shave them so thin that you will cut off the roots of the hair, causing the hair to come out. There is not so much danger of this in shaving a prime hide, as the roots of the hair are not so deep as in an unprime or "blue" hide. **Fox skins** are so thin that no shaving is required.

Preparing the Tanning Liquor

After you have the skin in first-class condition, you can prepare the solution which does the actual tanning. This tanning liquor is made from **salt, sulphuric acid and water.**

Prepare as Follows:

Secure the required quantity of rain water or soft water to make the desired amount of tanning liquor. For each gallon of water you should use about **2 pounds** of common salt. If you wish 5 gallons of liquor you should of course use 9 to 10 pounds of salt. Stir the salt into the water and continue to stir until it is fully dissolved. Perhaps all of the salt will not dissolve, but stir the solution until the water has taken up all the salt that it will and becomes fully saturated.

Now pour into this brine about **3 ounces** of common commercial sulphuric acid, such as you can procure at any drug store, for every five gallons of brine.

It is not necessary to use chemically pure acid; simply tell your druggist that you want common commercial acid and he will know just what you need. Stir the acid well into the brine and you will now have the tanning liquor complete. It is a good plan to keep this liquor in air-tight jars or large bottles. You are now ready to tan the hide, which has already been carefully prepared.

The Actual Tanning

Stretch the skin out and tack it on the floor on a large board. It is not necessary to stretch the skin very tightly at this time, but it should be so spread out that every part of the interior is exposed.

Now pour a small quantity of the tanning liquor in the center of the hide and spread it out by the use of a stick on which you have tied a wad of waste, or soft cloth. With this swab spread the tanning liquor over **all parts of the interior of the skin.**

If necessary pour on a little more from time to time, until you are sure that each and every part of the inside of the skin has been covered. Get it on entirely to the edges, but do not get it on the hair.

It is a good plan to scatter a little sawdust on the skin so that the tanning liquor will not settle in a few places only, or run off the edges of the hide.

Small hides will require only one application of the tanning liquor, but very heavy ones should have another application after half an hour.

Leave the skin stretched out for half an hour and then **ROLL IT UP WITH THE FLESH SIDES TOGETHER.** Lay it away for about 12 hours, and then examine it. Stretch it with the hands and if it shows **WHITE** all over, the tanning is done. If it appears raw in spots, then roll it up again and leave it a few hours longer. Experience will soon tell you when it is done.



Now hang the hide up and allow it to become dry. After it is dry or almost so, spread it out and wet the leather side well with **soap suds**, and roll it up carefully and allow it to remain until it is thoroughly soft again. This will require 12 hours or more. After this put the hide, while still wet, on the beam and break it up with the fleshing knife, and if necessary use the currier's knife to soften any hard or stiff places.

Oiling the Hides

If you are tanning skins with very heavy leather, such as badger, raccoon, calfskin, etc., instead of applying soap suds as just described, use a mixture of neatsfoot oil and soap suds and apply this while the skin is still wet, as follows: Dissolve 2 pounds of soap in 1 gallon of water. Heat till it boils. Then pour in $\frac{1}{2}$ gallon of neatsfoot oil, which will make an emulsion. Apply this mixture to the leather side with a brush until it is well covered. If a smaller quantity is desired, use a less amount of each ingredient in the same proportion. Nail the skin up and this mixture will soak into the leather, and while it is still somewhat moist, break up any hard places with a fleshing knife.

The skin is now ready for the last process of the tanning, which further breaks up the stiffness, and also cleanses the hair or fur.

Tubbing the Hides

We now wish to describe briefly what professional tanners term "tubbing." This is a treatment that softens the skins after tanning, and if the student can arrange to "tub" the skins, the results will be exceedingly gratifying. In order to do this, you will need no equipment except a barrel or tub, and about a bushel of hardwood sawdust. The skins are placed in the barrel while moist and covered liberally with the sawdust, and then simply manipulated by tramping with the bare feet. It is best to have several small skins treated at the same time. Have plenty of sawdust and continue to tramp the skins, turning them in all positions, with first one side up, then the other, for half an hour to an hour, and by that time all hardness, stiffness, etc., will have completely disappeared. This seems a crude way to perform the work, yet in all small tanneries will be found professional "tubbers."

After "tubbing" you should then work the skin over a beam again until it becomes perfectly soft and pliable in all parts.

After you have the hides "tubbed" you may discover that some parts are still stiff and hard, and if so, you should work them over a beam and "tub" them again. It is a good plan to "tub" the hides a second time in order to make them soft and clean. Before the second "tubbing," use coarse sandpaper on the skin. It is by liberal use of sandpaper that professional tanners secure the smooth appearance of the leather.

When the skin is taken from the tub for the last time you can then hang it up and beat it for a considerable time in order to remove all the sawdust from the hair. It is then of course necessary to comb and brush the hair until it is perfectly soft and fluffy. A good currier's comb is absolutely necessary for this class of work.

You should now have a nicely finished skin that is well tanned. If you are at all successful with your first efforts, you should congratulate yourself. A few efforts, however, will enable you to get good results, and if you follow these instructions closely, there is no reason why you should not tan skins with complete satisfaction for rugs and robes.

After the skin is finished, you may dampen it slightly with soap suds, and wrap it again for an hour or two, after which you can stretch it on the floor lightly and tack the edges, as shown on **figure 122**. This will straighten it out so it will lie smoothly when made into a rug or robe.

Caution—The tanning liquor is a poison and should be treated accordingly. Do not get the acid on the hands or clothes; simply use ordinary caution with the tanning liquor and there is no danger whatever.

Preserving the Ears

Special attention should be given to prevent the fur on the ears from slipping in the case of animals such as fox, coyote, raccoon, etc., where the ears are small, and it is not practical to skin out the cartilage. Before such skins are put in the tan, take a steel comb and pound the teeth through the ear on both sides. If you do not have a steel comb, use a needle. Do this until the entire surface of the ears is punctured with many holes. Then rub in salt on both sides. These directions apply only to fresh hides. If the ears are dried it will not do any good.

Removing the Heads

If you are tanning hides for **robes**, you will probably not wish the heads on, hence they should be cut off and saved for other purposes. You can also cut off the feet. Simply tan the body skin.

If, however, you are tanning the hides for **rugs**, you will of course wish the heads on the rugs and you should proceed as follows:

Cut the heads off from the skin at the neck and tan only the body skin as directed in this lesson. Take the head after shaving it down and skinning out the ears and place the scalp in the **pickle-bath**, which is fully described in another lesson. When you are ready to make the rug you mount the head skin and sew it onto the body skin. Some Taxidermists tan the head skin with the body, but this is not at all desirable, for it is then exceedingly difficult to mount it. In order to mount the head well you must have the skin thoroughly pickled so it can be stretched to its natural size. Further information on this subject is taken up under the subject of Rug Making.

Important—When preparing hides such as **lynx**, **wild cat** and others that have **soft fur**, you should not soak them in water, for if you do the fur is apt to get in bad condition and you cannot straighten it out again. Therefore when relaxing dry skins of this kind, it is best to **bury them in wet sawdust**. Then take them out and shave them down occasionally and put them back in wet sawdust and continue to do this until you have the hide soft and pliable. You can then proceed to tan them the same as you do hides that have been soaked in water.

For hides that are thick and heavy you can use **more acid** than for hides that are thin and flimsy. Keep this in mind when you are making up your tanning solution.

After you have tanned a few hides of various sizes, your judgment will tell you just exactly how to mix the tanning liquor, so that it will do best work under all conditions. We have given you a formula that is **satisfactory** in every detail, and it now remains for you to perform the **actual work**, which you will find very interesting. It is not play by any means to properly handle and tan heavy hides; on the other hand, it takes good honest work—but then this is required in anything we do well.

SECOND METHOD

Applicable to all skins and furs.

Wash the hair thoroughly with rain water, if obtainable, and good soap. Rinse in clean water and squeeze until most of the water is removed. Remove all clinging flesh by scraping the whole interior with a dull knife.

Now make a paste as follows:

Borax, 1 oz.; common salt, $\frac{1}{2}$ lb.; powdered alum, $\frac{1}{4}$ lb.

Dissolve in hot water and while still hot mix into the solution corn meal, wheat flour, or rye meal until a thick paste is formed. Wipe the skin dry and apply a thick coat of the paste on the interior with a brush. Fold the skin and lay away in a dry place for 8 to 12 hours. Now unfold the skin and scrape away the paste. Wash the skin thoroughly in clean water and allow it to dry in the shade. After it becomes dry, work it over a beam and stretch with the hands until perfectly soft. With larger skins give it a second application of paste after the first has been washed away, and allow it to lie six hours longer. In tanning heavy hides, such as cow, bear, etc., several days instead of 8 to 12 hours would be necessary.

If the flesh side is all white, it is tanned. If there are spots that are not tanned, the work is unfinished. Apply the mixture of neatsfoot oil and soap suds as described under the heading "Oiling the Hides" given in the "First Method," in tanning skins with thick leather.

A chief element in all tanning is the working and manipulating of the skin after dry to break up the hardened tissue.

THIRD METHOD

Especially for fine furs.

Soak for several hours in tepid rain water. Remove and wring dry. Apply the following mixture to all parts of the interior with a small brush:

Borax, 1 lb.; sulphate of soda, $1\frac{1}{2}$ lbs.; saltpetre, $1\frac{1}{2}$ lbs. Mix with sufficient water to form a paste.

Fold the skin and leave it for two days. Wash the interior free from paste, dry with clean towels and apply the following:

2 oz. sal soda, 1 oz. borax, 4 oz. white soap; dissolve in boiling water.

Allow the skin to lie several hours, after which it is again thoroughly cleansed.

Now immerse in a solution of 15 oz. salt, 3 oz. saleratus, 6 oz. alum; dissolve in 3 gals. rain water; allow to remain several hours.

Hang in the shade to dry, and then again place it in the solution for several hours, after which it is dried and the inside gone over with sand-paper and pumice stone. This is a most excellent method, and can be used with splendid success on the pelts of beavers, mink, otter, etc.

FOURTH METHOD

Nail the skin to a board and carefully scrape away all flesh. Procure a liberal supply of chalk and rub it thoroughly into the skin with a blunt instrument until no more will be absorbed. Brush away all loose chalk dust and rub in powdered alum. Wrap it tightly for a few days. It will remain nice and soft and always retain the hair or fur.

FIFTH METHOD

One peck wheat bran, $1\frac{1}{2}$ lbs. sulphuric acid, 4 lbs. salt, 5 gals. rain water.

Mix thoroughly and immerse the skin for 24 hours. Remove and wash well in clear water. Now repeat the same operation.

Apply the mixture of neatsfoot oil and soap suds, as described in the "First Method," if the skins have thick leather. Allow the skin to dry in the shade.

SPECIAL METHOD FOR SHEEP SKINS

Cut away all useless parts, soak for a few hours in water and then flesh the skins thoroughly.

For each skin mix the following ingredients to a paste with a little water, and then add just enough water to dissolve:

Borax, $\frac{1}{2}$ oz.; saltpetre, $\frac{1}{2}$ oz.; Glauber salts, $\frac{1}{2}$ oz.

Spread this over the flesh side of the skins with a good stiff brush, applying more freely on the thicker portions.

Fold the skin with wool outside and leave for twenty-four hours.

Then wash each skin clean and apply in same manner mixture of borax or sal soda $\frac{1}{2}$ oz., hard soap 2 oz., melted together.

Fold the skin wool side out for 24 hours, keep in warm place. Dissolve alum 4 oz., salt 8 oz., soda 2 oz., in enough hot water to saturate each skin, when cooled so hand can be borne in it, put in skins and leave 24 hours and then wring out and hang up to dry. When nearly dry commence to work them, and this must continue until dry and soft. Finish with sandpaper.

METHOD FOR BLEACHING WOOL

Wash tanned skins thoroughly in strong warm soap suds, rinse in clear water.

Mix Chloride Lime $4\frac{1}{2}$ lbs., water 20 qts., stir until dissolved. Allow to stand until settled. Draw the clear liquor off into a solution of $10\frac{1}{2}$ qts. water in which has been dissolved $5\frac{1}{2}$ lbs. Glauber salts. A precipitation results which leaves a clear liquor, which is then drawn off and the skins immersed therein until they are thoroughly bleached, which takes about two days.

When sufficiently bleached, the skins should be washed first in clear water, then in a solution of good white soap to give the necessary soft feeling.

LESSON TWENTY-EIGHT

Tanning Heavy Hides

In tanning large hides it is necessary to give them some **very careful preparation**. Always keep in mind the fact that a large part of the work in tanning is in the preparation of the skin, having it **perfectly soft and even all over**.

Heavy hides must be **shaved down until thin** with a currier's knife, and must be entirely clean of all fat and flesh. We do not use any acid in tanning heavy hides, for it does not penetrate sufficiently, but only tans the surface. You will therefore prepare a tanning bath as follows.

Into 4 gallons of water stir in 1 pound of powdered alum and $1\frac{1}{2}$ pound of salt. For very heavy hides you can put in as much as $1\frac{1}{4}$ pounds of alum to each 4 gallons of water.

Place this solution in a barrel and put the skins into same. Be sure that all parts are submerged. As the tanning liquor works on the skin, it puts it into such condition that the fleshing knife will take hold, so after a hide has been in the solution a week or so it should be removed, worked over a beam, and fleshed as found necessary. Work all hard spots until the tissue is thoroughly broken up and made as soft as surrounding parts, so the tanning liquor can penetrate, which it cannot do if any part of the surface is hard and flinty.

After you have done this, apply to the interior of the hide a coat of **neatsfoot oil**. You can apply the oil quite liberally to heavy hides. It can be put on with a brush or cloth. After it has been oiled, hang it up in the shade for several days, then take it down and work it over a beam again, and continue to do this until the hide is nice and soft.

It is not practical to make harness or other kinds of leather without the necessary heavy machinery, drums, steam heat and other appliances with which large tanneries are equipped, so no attempt is made to give instructions in the tanning of hides without hair or into leather of this kind.

Making Buck Skin

It is not possible to produce as fine a grade of buck skin as if made in a regular tannery, but if you follow the instructions carefully and practice a few times, you will be able to turn out a quality of work that is very good indeed. Take the dry hide and soak it up for a day or two in water until it is perfectly soft and if necessary shave it down occasionally to soften up the hard spots. When the skin is perfectly soft, put it in a solution of **water and slaked lime**. Be sure that the lime is fully slaked, for if it is not, it will **burn** the skin. Use about 1 pint of the slaked lime to each gallon of water, and make it sufficient to entirely cover the skin. Now put the skin into this solution and churn it up and down until the liquid has reached all parts of the hide. Allow it to remain for two or three days or until all of the hair is **very loose**. You can tell by testing the hair when it should be removed. Now take the skin out, put it over a beam and **remove the hair and grain** with a fleshing knife, or a dull draw knife. It is best to use gloves when doing this work, as the lime is hard on the hands. After you have the hair and grain all scraped off the skin, you can wash the hide through several waters to remove the remaining lime. After this is done, you should place the hide in a tanning liquor made as follows:

To each gallon of water stir in $\frac{1}{4}$ pound of salt and $\frac{1}{3}$ pound of **alum**, and continue to stir until it is fully dissolved. Now place the skin in this solution and be sure that all parts are covered and allow it to remain ten days or two weeks. When it has been in the tan a sufficient time, take it out and wash the hide thoroughly in clear water. You should now tack it out in the shade until it is almost dry, after which you should give it a very slight coat of neatsfoot oil. Then hang it up in the shade again until it is almost dry. Take it down, work it over a beam and beat it until it is perfectly soft.

Now place it in a tub of sawdust and proceed to tub it as instructed in another portion of the lessons. If you wish the hide to be white, put a little flour in the sawdust, or if you wish yellow buck skin it is necessary to smoke the hide over a smudge made of wet willows or something of this kind. You can smoke it until you get the desired color and then break up the stiffness in the leather. This is done by attaching a rope to the wall or a tree, about 6 feet from the ground, and attach the other end about 1 foot from the ground, leaving a little slack. Place the skin through this rope and pull it back and forth and you will find that it breaks up the hide excellently and makes it nice and soft. In making the tanning bath for tanning buck skin you can test it with a salinometer. It should test about 50 or 55 degrees.

LESSON TWENTY-NINE

Tanning Snake Skins

It is an exceedingly difficult matter to tan snake skins properly. It seems that the texture of the skins varies greatly, and for this reason you do not get uniform results. Therefore a little experience is the best teacher, after you understand the formulas to use.

You should tan snake skins as follows: Soak the dry skin in water until it is perfectly soft. Now make a solution of lime and water exactly as described for tanning buck skins. Put the snake skin in this solution and leave it two or three days. Take the skin out just as soon as the scales are loose, for otherwise it might be burned. With a stiff brush scrape the scales away, for it is impossible to tan snake skins successfully with the scales on. Now make a weak solution of alum and salt, using not more than $\frac{1}{4}$ pound of alum to each gallon of water, and about 2 ounces of salt. Place the skin in this solution and allow it to remain for a week or ten days, then take it out and wash it through several clear waters, and after this is done, hang the skin up until it is almost dry, when you should take it down and work it carefully over a beam to break up the stiffness.

You are now ready to oil the snake skin, but it is very difficult to get oil soaked into the skin, so it is necessary to apply a coat of alcohol ahead of the oil. Cover the entire surface of the snake skin with alcohol and then put on a coat of neatsfoot oil. This alcohol will soak into the skin and take the oil with it, after which the alcohol evaporates, leaving oil in the skin. After a few hours you should take the skin and work it over a beam or through a rope until it is perfectly soft.

As stated above, the results may not be entirely satisfactory until after you have practiced on a number of skins and have learned through experience just how to handle them. Snake skins, especially small ones, do not make very strong leather, and for this reason it is best to use a leather lining when making these skins into belts or hat bands. After the skins are made up it is a good plan to give them a coat of shellac on the outside.

LESSON THIRTY

Making Rugs

Each Taxidermist should be able to make rugs from the various fine pelts that he invariably secures. Among all the branches of the art no work is more desirable nor is the finished product more useful. After learning the foregoing lessons, rug-making will prove comparatively easy, as many of the details are identical.

The skins of lions, wild-cats, lynx, wolves, foxes, dogs, deer, bears and in fact most animals of these sizes, make desirable rugs. The manner of construction will be the same in all cases. It is, of course, essential to preserve the skins in the best of condition if good and serviceable rugs are to be made.

Many persons preserve the skins with salt and alum and then make them into rugs, but this is a serious mistake, for the skins will surely become hard, and after they have been used a few months will crack and break, and the chances are the hair will fall out; therefore, in order to have a **good rug**, it must be **soft and pliable**. The skins must be made into a good quality of leather. This can be attained by **TANNING**. The first essential part, then, in making rugs, is to tan the skins. You already have complete instructions on this subject, and you will not need any further information at this time.

We have already explained to you that the heads should be cut off from the skin and put into the pickle-bath. We assume that the skin is tanned and ready to be made into a rug and the head skin is in the pickle-bath in good condition to be mounted.

Rug-making is divided into three distinct steps:

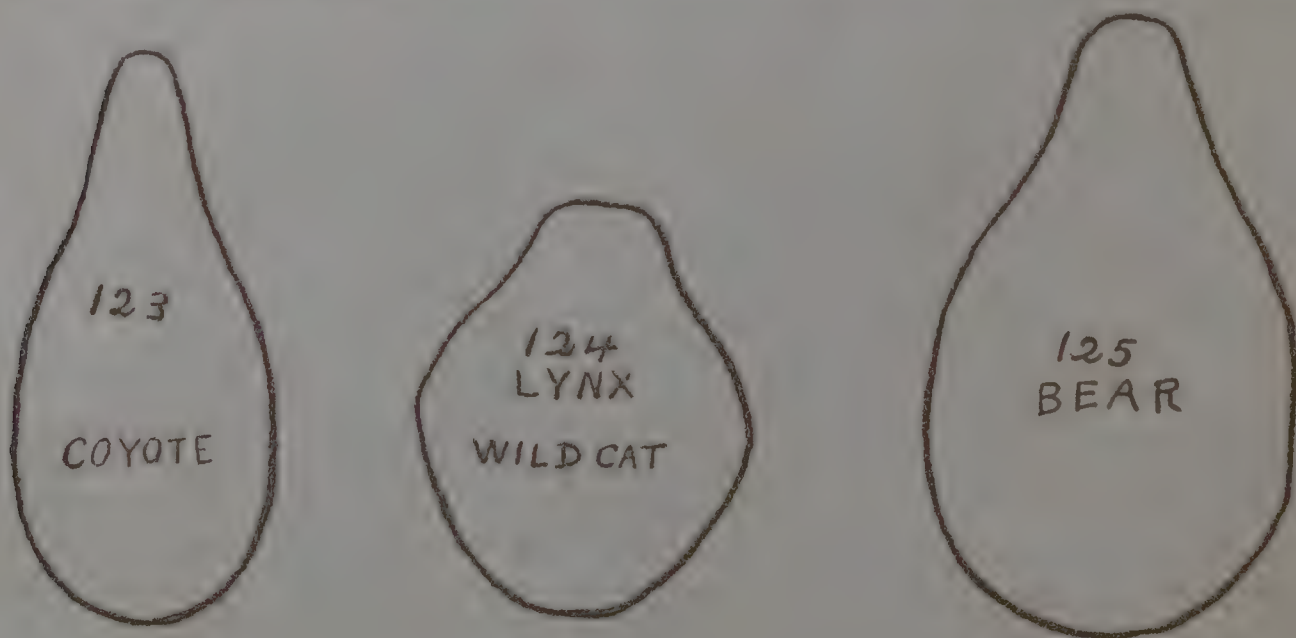
First—Tanning the skin.

Second—Mounting the head.

Third—Attaching the head to the hide and lining the rug.

There are several plans that you can use in mounting heads of animals for rugs.

First, you can use only the upper half of the head-skin, above the mouth, and construct what is known as a half-head for the rug; or, second, you can use the entire head with the skull, and mount the full head with open mouth.

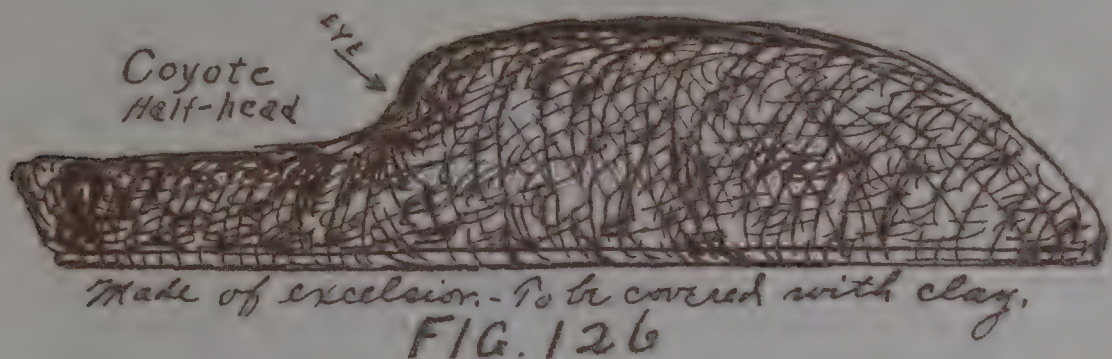


The latter makes the most attractive rug, yet the former is often used if the natural skull or artificial one cannot be secured, then it is almost necessary to make a half-head.

Half-Head Rugs

We will first instruct you in making half-head rugs. The first thing to do is to cut out a board that will lie on the floor and act as the bottom of the head. This board must be cut to the proper shape and size to suit the animal you are working on. **Figure 123** shows the correct shape for the bottom board of a coyote, **figure 124** the correct shape for wild cat or lynx, and **figure 125** the shape for bear.

After preparing this board you will proceed to build on the upper side of it a form to resemble the natural head. Wind excelsior on the top of the board, using common white twine. Wind it down **very firmly**, adding a little here and there until you have the skull of correct shape and size, like **figure 126**. This form must then be covered with potter's clay.



Take the skin from the pickle-bath, and after preparing it by washing out the pickle and lining the ears, cover the inside with a coat of **arsenical paste** and put the skin on the form you have just constructed. Tack it tightly along the edges of the board. You should then trim off the skin even with the bottom edge of the board. You can then shape up the face, adjust the nostrils and set the artificial eyes as you have already been instructed. After you have the head completed, lay it to one side until it is thoroughly dry. You can then sew it on the body skin, after which you can do the lining.

Lining the Rug

The best lining for rugs is a good grade of **upholstering felt**, which can be had in most any desired color. Spread out the lining on the floor and lay the skin on same, then cut out the lining, leaving about two or three inches margin entirely around the hide. Now trim the edges of the skin until they are even, using a sharp knife.

If you wish to have a double border on the rug, you should select a border of desired color and then proceed to sew the lining to the skin around the edges, and stitch the border in at the same time. See **figure 127**. The border should be placed above the lining and extend under the edges of the hide. Continue this entirely around the skin, sewing it tightly with a strong linen thread and needle. You should allow the lining to extend under the feet and tail and also under the head. The lining is attached to the head board with brass-headed tacks.

After you have completed the lining you then place the edges of the lining on a beam and cut it into scallops with a pinking iron. The border should have been pinked before sewing it into position.

You can now finish the rug by cleaning and brushing it, and it is then ready for use. If you have done your work well, you have an article in which you will take much pride and you will certainly find it very useful.

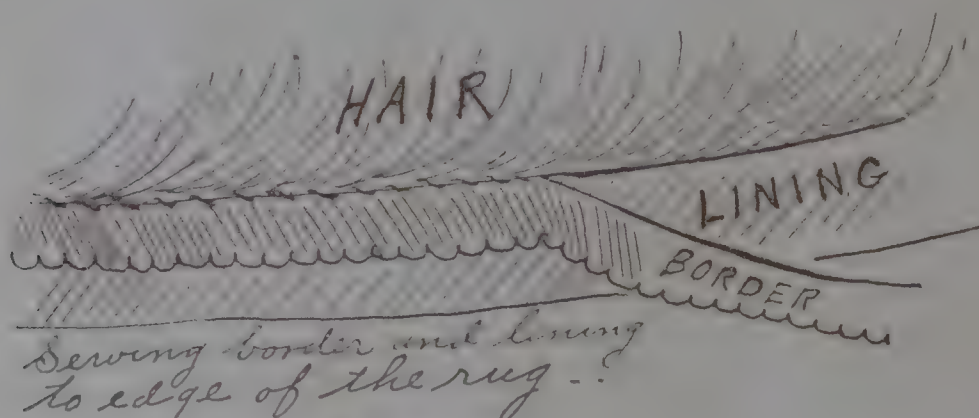


FIG. 127

Full Head Rugs

In order to make a rug with full head you must use either the **natural skull** or an **artificial one**. The natural one is to be preferred, if it can be secured and is in good condition. We will assume that you are using the natural skull.

Prepare a pine board one inch thick the general shape of the head and underjaw. This board will be fitted into the underjaw as shown in figures 128 and 128A. Attach it by passing nails or screws through the lower jaw bones into the board. After this is done, open the jaws and secure them in desired position by using a piece of wood of right width. Now fill in all parts of the skull and between the jaws with papier-mache or plaster-of-Paris. The papier-mache is no doubt better than the plaster-of-Paris, although the latter can be used satisfactorily. Now fill in at the nose and on the sides and back of the head with excelsior and wind it firmly into position. This is to replace the muscles and flesh that have been cut away. After you have the skull the desired size you should then cover it heavily with **potter's clay**.

After removing the scalp from the pickle-bath, wash it thoroughly to remove the pickle. Now line the ears with metal or leather, after giving the interior of the skin a heavy application of arsenical paste. Place it on the natural skull, adjust it in the proper position and mould the face as desired, which you can easily do, as the skin is underlaid with the plastic clay. You can give the face any desired expression at this time by placing in wrinkles, etc., making the desired expressions. Fill in the lips with clay or papier-mache and mould them into natural shapes. It may be necessary to take a few stitches with a needle and thread to hold the lips until they are set and dry.

Now make an artificial tongue from pine wood and fasten it in the mouth by passing a screw or nail through the tongue into the bottom board. Fill in around the tongue and lips with papier-mache. Suggestions for the proper shapes of the tongues will be found in figures 129 and 130. It is a good plan to paint the whole interior of the mouth with papier-mache which you have made thin enough to spread with a brush.

Adjust the nostrils and put the head away until it is thoroughly dry. You will now finish the head by painting the whole interior of the mouth with colored wax, which may be obtained from taxidermy supply

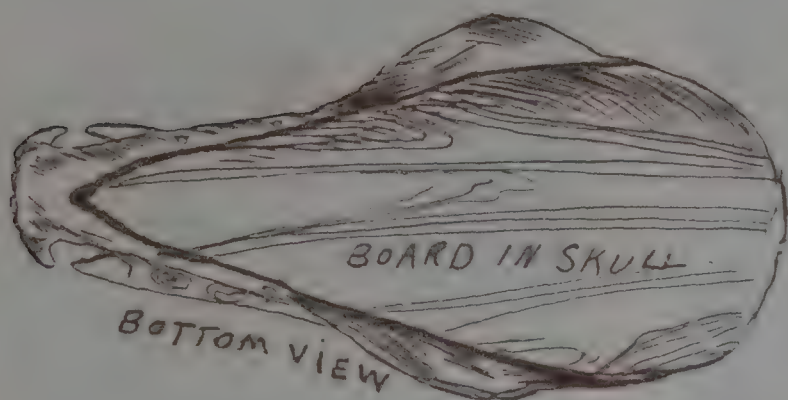
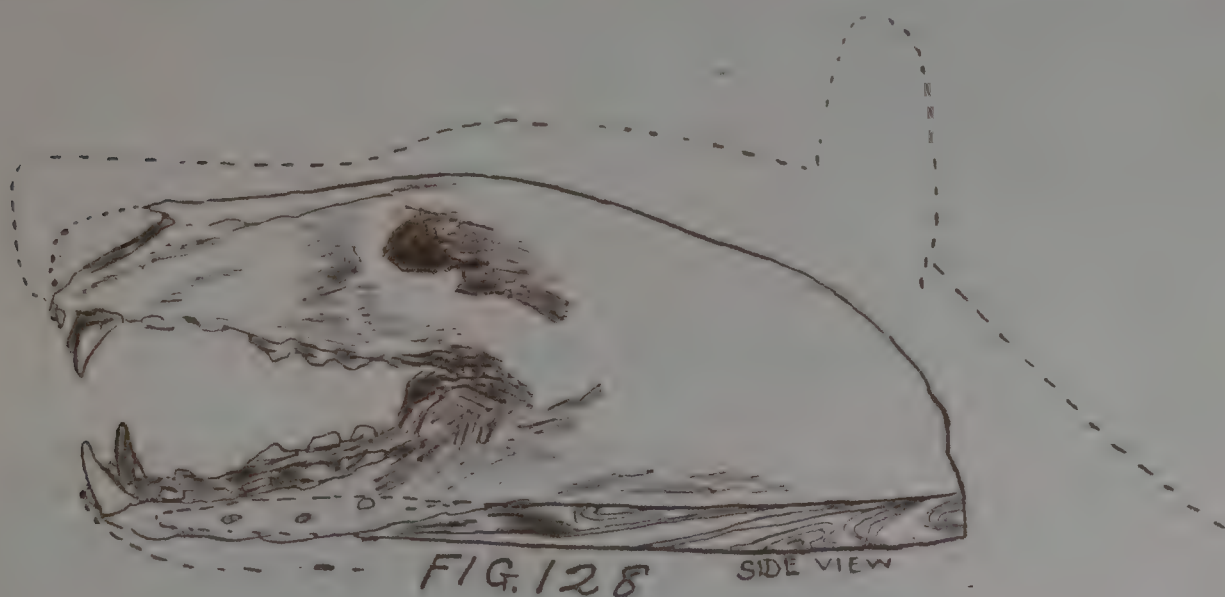
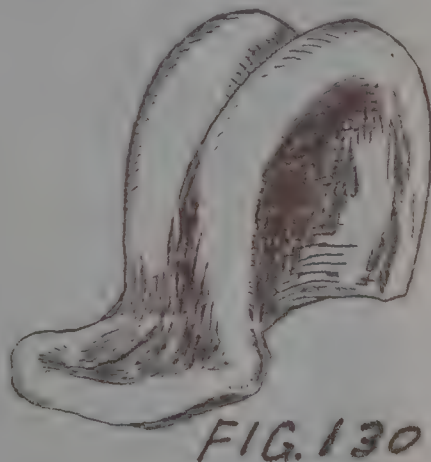
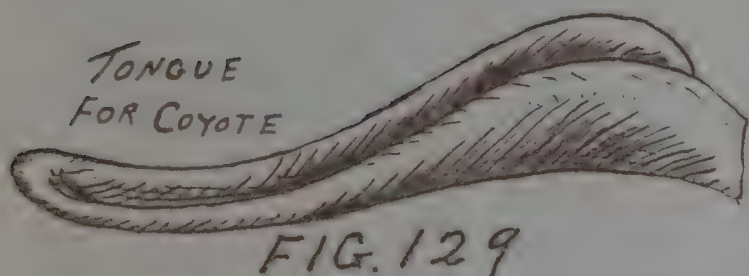


Fig. 128-A

stores in small cakes in pink and black colors. Melt a small portion of it in a lid. You can apply the wax readily with a brush. Work quickly, for if you take too much time the wax will set and you will be unable to spread it as desired.



Paint the lips and nostrils with black wax. Set the eyes in a bed of clay or papier-mache, and fill the edges with black wax.

When the head is finished you are ready to sew it to the body skin. If necessary trim the edges of the skin so that they will fit snugly together, and not leave wrinkles at the juncture. After this is done you can proceed to line the rug as directed above. The lining should extend out to the end of the lower jaw and should be tacked to the bottom board with brass-headed tacks.

If lips give trouble, hold them in place with brads or pins from which heads have been cut.

Miscellaneous Illustrations



Bob Cat



Red Fox



Snow-Shoe Rabbit



Manikin for Elk

LESSONS IN TAXIDERMY



*A Comprehensive Treatise on
Collecting and Preserving all
Subjects of Natural History*

BY

Prof. J. W. ELWOOD, B. S.

BOOK VIII--Lessons 31 to 38

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LESSON THIRTY-ONE

Open Mouths

Many specimens may be made unusually attractive by mounting them with open mouths. For example, the animal that is known to be savage may be given his characteristic attitude. Among these are the bob-cat, lynx, bear, panther, etc. In fact, there are a few specimens of any kind that may not be mounted to advantage with open mouths, but few Taxidermists are able to appreciate what the open mouth should indicate. In other words, each specimen so mounted should have some object for the position. The attitude of the body must accord with the savage expression and the open mouth. The lion is probably crouching before springing onto his prey; the wolf may be shrinking from an invisible enemy, or the hound in the act of rapid running. No animal deliberately stands complacently with the mouth open. It is well to remember these things when doing work of this nature.

Use either the natural or artificial skull. It is a matter of taste which to use. The natural teeth look a little more lifelike, but the artificial skull is already "built up" with tongue and teeth, saving a great deal of labor. The latter may be secured from a dealer in supplies.

In preparing the natural skulls, they must always be thoroughly cleaned of flesh. Boil them if possible, as this removes all the flesh quickly and well. If you desire the head for a rug you must provide a bottom board as directed in our lesson on "Rug-making." Otherwise the same process is necessary whether the head is on a living animal or to be attached to a rug.

The first thing, after cleaning, you should wire the lower jaw bone to the upper one at the joints. Now hold the mouth open the desired distance and fill all around the joints **LIBERALLY** with plaster-of-Paris or papier-mache. Allow it to harden, and you will find the mouth will be held firmly and in the desired position. Do not make the mistake of opening the mouth too wide.

The Tongue

Now make and set the artificial tongue in the mouth.

In making a rug, the tongue is attached to the bottom board with screws or nails (see "Rug-making"), but if you are mounting the head on a whole animal proceed as follows: Fill in the back of the mouth and the bottom of the mouth, between the lower jaw bones, with papier-mache. Now force the tongue into its proper position, and fill over the back part of it, and at the sides, with papier-mache, pressing it firmly into place with a wet rod, or with wet fingers. (Always keep the hands damp when handling the papier-mache.)

Mounting the Heads

You now proceed to build up the entire skull to natural size, by winding excelsior where needed to replace the flesh. When ready to put the skin on the head, you cover the entire skull with potter's clay, applying it liberally at the base of the ears, on the face and at the nose, also around the teeth and jaw bones.

After properly preparing the scalp, lining the ears, etc., you place the hide in position on the head. Adjust the ears in their proper places and force the ear-lining well into the clay on the skull. Fit the hide well

around the eyes, and bring it into position about the lips and nose. Now replace the flesh of the lips with clay, and mould them into a perfectly natural position. Form the nose and construct the face as desired by moulding the clay from the outside. Shape around the eyes very carefully. If necessary lift the hide frequently, to add more clay, or to remove some if you have applied too much. When you get it to suit you, lay it to one side until thoroughly dry and then put on the finishing touches.

We desire to add again that the **face moulding** is **very important**, and requires your best efforts. You must **KNOW** what you want in the way of shapes and expression and then secure them by careful work and practice. A specimen well mounted, of correct shape, with accurate head, lips, nose, etc., is a thing of beauty and joy forever, but one that is poorly mounted, or has its parts out of proportion, is a grotesque object, and deserves a better fate.

Finishing the Head

After the head is thoroughly dry, dig out loose clay from around the lips, teeth, nostrils, etc., and brush all the clay dust away carefully. Now fill in under the lips, around the teeth, the inside of the mouth and nostrils with papier-mache, smoothing it with a wet paddle or the hands. Build it well under the tongue, and on large animals cover the roof of the mouth with a thin coat of papier-mache. When you have all the mache in place, smooth it again with a brush wet with water. Allow the head to dry again, after which proceed to set the eyes and wax and paint the specimen to the best of your ability.

Setting the Eyes

Set the glass eyes on a bed of clay or papier-mache, getting them just the right depth, and have them both looking similarly out of the head. If the eyelids are dry and hard, soak them up before setting the eyes, by packing with wet paper or cotton.

Waxing the Specimen

Colored wax, both pink and black, may be obtained from dealers in Taxidermists' materials, and we suggest that it be obtained already prepared, as one would not likely have suitable wax and proper coloring materials about the home.

Colored wax must first be melted and allowed to partly cool before it can be satisfactorily applied. Use in warm temperature and apply to warm surface. Stir before using.

Apply with a small artists' brush. Dip it into the wax and apply quickly, for the wax hardens in just a moment.

Cover the whole interior of the mouth, including the tongue, with this pink wax.

Black wax is used for painting the lips, nostrils, and around the eyes, and when so applied assists very much in producing desired life-like expressions. Practice and familiarity with the workings of the materials will enable you to do the work well.

If the above suggestions have been carried out and the work well done, the head is then complete, and it will look just like life, with fierce expression, snarling lips, and squinting eyes. You will be delighted with this part of the work after you become familiar with it.

LESSON THIRTY-TWO

Polishing and Mounting Horns

It is often desired to preserve the horns of animals without mounting the complete head. This is really a very simple process, but still it needs considerable time and careful work. In order to do a neat job, the horns should be given a very high polish, and the chief element in doing this is **good hard work**. Such horns as steer, cow, buffalo, etc., can be polished very highly by the following methods:

Boil the horns for a short time until you can knock the inner core out. This should always be removed. While the horns are still hot from boiling, proceed to scrape them with a steel scraper, or piece of glass. The steel is better than the glass, for the glass is apt to break and leave scratches on the surface. Scrape the horns **lengthwise with the grain** and continue the scraping until you have removed all of the checks, cracks, etc.

It is a good plan to set the horn on the end of a stick and fasten it with three screws on the lower end of the horn, while you are working on it, as you can handle it much easier. After scraping them sufficiently go over the surface again with medium sandpaper, then again with **very fine sandpaper**, rubbing **with the grain**. You are now ready to start the actual polishing. The horns may be polished with either of the following substances:

Pumice Stone, Emery or Rotten Stone mixed with a little Linseed Oil.

Take a cloth and apply either one of the above polishes and rub very hard. You will find it necessary to continue this work a **long time**, and it will then take on a gradual polish. If you exert enough force and continue the work a sufficient time, you will secure the elegant high polish desired. Any one who is afraid of work should not try to polish horns.

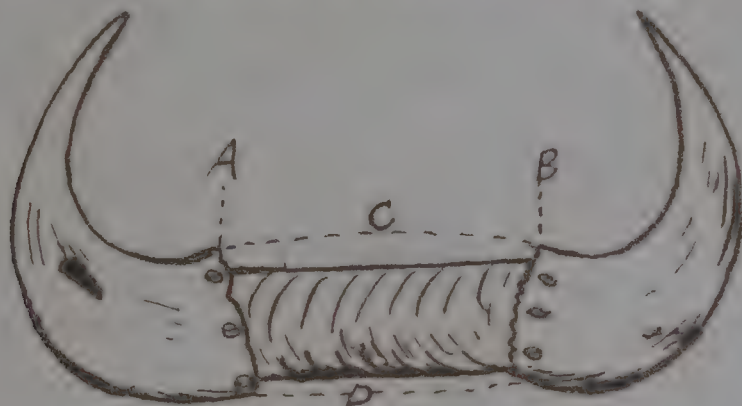


FIG. 130

If you have a **buffer** you can save a great deal of physical work, but as most of our students will not have this machine, they will have to depend on personal energy.

Horns are usually mounted on oak panels of desirable shape. When ready to mount the horns you should cut a round block of wood and carve it down so that you can fit one horn on each end, and attach the horns to the block by passing several small screws through holes made while the horns are yet soft from boiling. See **figure 130**.

Now cover the entire block with papier-mache or plaster-of-Paris as shown by the dotted lines in figure 130, making it very smooth and round. After it becomes dry you can cover it with plush or velvet, allowing it to extend over the base of the horns.



Drive a few brass headed tacks around the edge and you are then ready to attach the horns to a shield, which is done by inserting two or three screws from the back side of the shield into the center block. If you will follow the above suggestion you will be able to do nice work. We wish to add to the above instructions the following suggestion: Bore the holes for the screws just after you have boiled the horns, while they are still hot, as the work can be done much easier and quicker.

Mounting Antlers

The antlers of deer, elk, moose, etc., are often mounted on oak panels, the same as horns. These antlers should not be polished, but should always be cleaned by washing them thoroughly with sal soda and water. If they are bleached and white you should restore the colors according to instructions given in our lesson on mounting game heads.

If the antlers are attached to the skull or a portion of the skull it simplifies the mounting. Cut the skull down until only a small piece of it remains, holding the two antlers together. Screw a small block of pine wood on the back part of the skull and arrange it so that when the antlers are put on the shield they will be at the desired angle. Now wrap the front part of the skull and between the antlers with excelsior until you have secured the desired shape. Cover the excelsior with plaster-of-Paris and allow it to become dry, after which you cover this part with plush or velvet, tacking it to the pine block on the back side. The antlers are mounted on a shield by inserting screws through the shield into this block.

LESSON THIRTY-THREE

Restoring Colors

It is a lamentable fact that after a specimen is dead the colors of the feet, beak, eyes, etc., are apt to quickly change. The only remedy that we have is to carefully note the specimen as soon as it is secured and attempt to restore these natural colors by means of paints and stains. It is true that the workman must have some knowledge of mixing paints, as well as a critical eye, or he is likely to produce a grotesque and ridiculous specimen rather than a work of art. The tendency is to stain too highly or with colors entirely too bright.

The ideal way is to carry colors with you, and as soon as you have the specimen in your hand, sit down and work up your colors by observing the natural ones. This requires considerable time, yet the results amply justify every effort that may be made.

Ordinary artists' tube-paints are by far the best to use. By keeping the primary colors on hand with a supply of boiled linseed oil, turpentine and Japan dryer, any desired tint can be secured by mixing.

The paints may be applied with ordinary artists' brushes and must be put on very lightly. With most birds the only parts to be painted are the feet and mandibles, but many other specimens require additional attention. The web of the pelican must be covered with bright lemon. The buzzard receives a coat of paint over all naked parts, as do the vulture and similar specimens.

The colors of the mouth, nostrils, eyelids and usually the feet of animals require reproducing by means of paints. The snakes, frogs, turtles, etc., are varnished, very lightly, and if possible, the colors of the skins should be touched up with the proper tints and paints.

Fishes fade rapidly, and when the colors are once lost it requires an artist to reproduce them. We advise the beginner to mount his fish as quickly as possible after they are taken from the water, and not attempt the use of paints unless he expects to pursue the subject until he becomes proficient in his knowledge of the brush and palette.

We can sum up the whole subject by saying. **IMITATE NATURE.** Be sure your color is correct before it is applied. Avoid a polished appearance by mixing the colors with a little turpentine, and **PUT THEM ON SPARINGLY.**

A Few Combinations of Colors

To produce the first color named, mix together those following:

FLESH—Vermilion, white, yellow ochre.

ORANGE—Red, yellow.

GRAY—White lead, lampblack.

BUFF—White, yellow ochre.

FAWN—White, yellow, red.

DRAB—White, burnt umber.

LEMON—White, yellow.

Removing Stains

We have tried throughout our lessons to impress our students with the necessity of keeping the feathers of birds free from blood stains at all times. Some stains will get on the feathers regardless of how carefully you handle the specimens, and whenever possible you should remove these blood stains at once, while they are fresh. Some Taxidermists have suggested various things for taking off blood stains from feathers, but there is nothing that is equal to warm water. With a cloth or a soft brush go over the blood stains with the warm water, making several applications if necessary. If the blood is dry, scrape it slightly with the thumb nail, remembering that it is very easy to destroy the feather itself. Wipe the feathers as nearly dry as you can and then saturate them with gasoline and dry by rubbing in plaster-of-Paris and beating it out quickly. These stains should always be removed before the skin is put through the general cleaning process with gasoline and plaster-of-Paris.

Removing Odors

To remove odors from such skins as skunk, mink, etc., you should use nothing except water and ammonia. Place the skin in a solution of **water 1 gallon, ammonia 3 ounces**, and churn it up and down for a few minutes and then allow it to soak for half an hour. Now take up a fresh solution like the above and put it through again, after which you should wring out the water and allow the skin to become partly dry. Now dip it in gasoline and rub the hair full of corn meal. Rub briskly and continue to rub until hair is dry, after which the hide should be hung up and beat out with switches.

Another method: First wash thoroughly with gasoline, then rub into the hair a mixture of hot, clean sand and sawdust. Work it well into the hair until all parts have been reached. Allow to rest for some time, after which expose to the air. Shake and beat well.

LESSON THIRTY-FOUR

Cleaning Bird Skins Before Mounting

Some Taxidermists do not pretend to clean bird skins further than to remove the blood spots. We, however, never mount a bird of any kind without thoroughly cleaning every feather when necessary. On most birds this is not absolutely necessary, but it is when mounting such specimens as hawks, eagles, owls, crows and other birds that are apt to have grease on the feathers.

Cleaning of the plumage is not difficult after you know how, but you must practice a few times in order to be able to turn skins out in first-class condition. **THE WORK IS DONE ENTIRELY WITH GASOLINE AND PLASTER-OF-PARIS.** You may clean the feathers before you start to mount the birds, but we prefer to clean them after we have inserted the artificial body and have the incision sewed, but before we start on the wings or shape the specimen up in any way. With a sponge apply a large quantity of gasoline to all parts of the plumage until it is **fully saturated**. You cannot get it too wet, for you must use plenty of gasoline in order to do this work right.

You should have a cleaning board about two feet wide and three feet long, or larger. This board should be smooth and have laths of narrow boards, two inches high, tacked around the edges. Lay your specimen on this board and literally cover it with plaster-of-Paris. Rub the plaster into the feathers, working very rapidly before the gasoline evaporates. After thoroughly rubbing the Plaster-of-Paris into all parts of the plumage, you must then beat it out with small switches. Continue this work until the plumage is absolutely dry, and it will then be perfectly clean and will have the natural fluffiness so much desired.

If you allow the plaster to "set" in the gasoline you will, of course, have a bad mess on your hands, but if you work rapidly, and practice the cleaning of birds a few times, you will soon be able to thoroughly clean your bird skins, which will add much to their beauty and permanency.

Cleaning Animal Skins

You can never get the skins too clean for mounting. The cleaner the better, for they will look much better and will not offer temptations to insects. Take, for example, a wild cat skin which you are mounting. After you have it mounted and the skin has become thoroughly dry, you should proceed to clean the fur before finishing up the specimen.

Saturate the fur with gasoline and rub corn meal well into it. Pour the corn meal on in large quantities and rub it very rapidly with the hands, and continue to do this until thoroughly dry. Do not forget to use plenty of force and hustle. Do the work as quickly as possible, for the gasoline evaporates readily. After you have gone over the entire surface of the animal in this way, and after it is completely dry, you should then finish up the job by combing out the fur, or hair, carefully with a furrier's comb. It is quite essential to have one of these combs in order to do good work.

It is a good plan to dip the entire hide in gasoline before you start to mount it, as it will cut out most of the grease and will make the cleaning easier after the specimen is put up.

Cleaning Old Specimens

BIRDS

The process of cleaning old mounted specimens is very much the same as cleaning newly mounted ones. They must be cleaned with gasoline and plaster-of-Paris. This requires careful work in order to prevent the breaking of feathers and spoiling them.

Simply saturate the parts to be cleaned with gasoline and dry with plaster-of-Paris as you have already been instructed. If there are any fly specks on the specimen, you will find it necessary to remove them with hot water and then dry with gasoline and plaster-of-Paris. After you have the bird thoroughly cleaned you should restore the colors of the beak and feet with tube paints, and if necessary polish the eyes and place a little fresh wax around the margins.

ANIMALS

Mounted animals are cleaned with gasoline and sawdust or dry corn meal. Saturate the parts to be cleaned very liberally with gasoline and rub sawdust or corn meal into the hair or fur, working quickly before the gasoline evaporates.

Important—When cleaning hides of beaver, otter, and other similar hides, never use sawdust or corn meal, for you will find it almost impossible to get it out of the fur. Instead of using these substances, prepare a quantity of hot sand. After you have dipped the hides into the gasoline, rub the fur full of the hot sand, working them over thoroughly in order that the sand may penetrate entirely to the hide. Whenever you clean skins of this kind with sand, or any other substance, they should be thoroughly beat out afterwards and then combed and brushed until they are in fine condition.

LESSON THIRTY-FIVE

Relaxing Dry Skins

While it is always best to mount birds while they are still fresh, it is often necessary to postpone mounting until a later time. The sportsman very often secures nice birds while away on his hunting trip, but is not in position to do the mounting until he returns home. In cases of this kind it is necessary to skin out the birds as you have already learned, and to allow the skin to become dry and hard, so that it will not spoil. This is also often the case in regard to animals, and the student should, therefore, clearly understand how to relax dry skins and get them in good condition for mounting.

BIRDS

In order to relax dry bird skins, dip the feet and head into water, then wrap the skin in a thin piece of cloth and bury it in wet sawdust. After a few hours examine the skin and see if it has started to relax. If so, take it out and scrape the skin with a skin scraper or knife, and then place it back in the wet sawdust, and continue to do this until the skin is thoroughly relaxed. You may have to take it out and soak it a half dozen times or more, for some parts will soak up very slowly. If necessary, dampen the inside of the skin from time to time with a little warm water. Remember that it takes time and plenty of scraping to relax bird skins; also remember that you cannot do a good job of mounting until the skin is just as soft in all parts as it was when you first took it from the bird.

ANIMALS

Most animal skins can be relaxed by soaking them in water. They should not be left too long in the water, however, or the hair will slip. Remove them from time to time and scrape down the hard places, and continue to do this until you have them soft and flexible. You will have to remove them from the water frequently and shave them down with a fleshing knife or currier's knife, especially on the hard spots that soak up slowly.

Such hides as lynx, wild cats, rabbits, etc., should be soaked up by using wet sawdust instead of placing them in water. It takes quite a time to thoroughly relax hides in this way, but by working them over occasionally and wetting the interior with water you will find that they can be thoroughly relaxed and become perfectly soft and in fine condition for mounting or tanning.

LESSON THIRTY-SIX

Fancy Taxidermy

After the student has acquired some skill in mounting birds and animals in plain and simple positions, he may devise countless attitudes that are very attractive and interesting.

The first principle governing the position or attitude of any subject is to put it in some form that it assumes in nature. This knowledge comes almost entirely by observation or a study of illustrations. "Watch the screaming gull in his almost innumerable positions upon the wing; the nimble sandpiper running along the shore, and the gracefully floating duck upon the water. After watching these in their various attitudes, work, but do not cease to study for improvement."

We name a few striking positions: (The hawk, hovering over his intended prey; the owl, in swift, noiseless, downward flight to seize his victim; the duck, alarmed and ready to take flight; the birds of prey, with their captives in their talons; the positions indicating fright, anger and timidity; the squirrel, running up the branch of a tree or contentedly sitting upon his haunches cracking his store of nuts; the fox, with some bird beneath his foot, or slowly approaching an unsuspecting bird at rest; the pointer, in his characteristic attitude in the presence of the game bird; the heron, complacently resting on one foot, the other well drawn up into the feathers of the breast; the peacock, with tail feathers spread into beautiful form; the wounded bird, attempting to escape; frogs, in various position of human caricature, and an endless variety of other positions that will suggest themselves to the Taxidermist as he progresses with the work.

Again, we say, observe nature, study the habits and natural positions of the various birds and animals, and reproduce them to the best of your ability, and you will not be far from right.

Artificial branches and leaves may be purchased of any dealer, and with their use each specimen can be given surroundings which indicate his habitat and also his habits.

Many specimens may be appropriately mounted on natural branches and stumps, which the student is able to secure at no cost whatever.

Dead Game

An attractive way of mounting birds and some animals is in the position of dead game, hanging by the feet, on a neat oak panel. This class of work is especially appropriate for bars, dining-rooms, etc. The mounting is performed as already directed, except the positions must be in conformity with the idea. The leg wires need not be so heavy, and the eyes may be closed, though many prefer them half open and supplied with artificial glass eyes. Two or three good specimens may be grouped on the same shield, indicating the hunter's bag of game, as brought from the field. The wing should be **wired** and slightly spread, or drooped downward, as they would naturally hang from a dead specimen. The beginner will get excellent results from this class of work. Oak oval panels for dead game cost very little.

Snow Scenes

Beautiful effects may be created by representing a group of birds or animals in a winter scene. This requires considerable skill and artistic arrangements. Trees, branches, etc., can be covered with glass frosting or mica snow. Grass, leaves and strings can be coated over to resemble frost by allowing them to soak in very strong alum water and then dry thoroughly. The ground or base can be covered with glass frosting, powdered alum or anything of this kind to create the snow effect. The ingenuity of the student will show plainly in such classes of work. It is quite impossible to go into various details, but we offer these suggestions so that the student can carry them out if he desires.

Artificial Rocks

In order to make artificial rocks proceed as follows: For an eagle, take a piece of board 10 inches square and nail cross-pieces on the bottom to keep it from warping. In the center of this board erect an upright piece about 8 inches high, and then place another bar 6 or 7 inches long across the top of this one, making the regular "T" perch. Nail these boards together solidly.

Now take a piece of coarse cloth, burlap or "gunny sack," and place it over the top of the "T" and draw it down to the edges of the base board, where you should tack it firmly. Do not stretch it evenly, however, but have it irregular, with wrinkles and lumps here and there to represent the surface of a rock.



You should now take a quantity of papier-mache, having it quite thin, and apply it all over the surface of the burlap with a thin knife or putty knife. After you have covered it completely with a thin coat of papier-mache, take a small brush which you dip in water and go over the surface, making it smooth. Now take another brush and apply the desired colors. We always put the colors on while the papier-mache is fresh and wet. Dip the brush into turpentine and then into dry paint of desired color and brush it lightly over the fresh papier-mache. After you have practiced this a few times you will be able to reproduce any color that you desire. It is best to paint it unevenly or mottled. You can make a large variety of colored rocks in this way.

Perches

You can make small perches in the same way, by constructing small "T" stand and covering it entirely with papier-mache. Put the papier-

mache on liberally; you can then mould it to look like an artificial limb or branch. In fact it is a good plan to use a natural branch, which can be covered with papier-mache, or you can simply varnish the limb and put the specimen on same.

Flat Mounting Boards

Neat and cheap mounts can be made by simply cutting out flat boards of the desired sizes and giving them a coat of papier-mache. While the papier-mache is still wet, paint it any desired color by using dry paints and turpentine.

Another very attractive way to make these flat stands is to cover the board with a thin application of papier-mache, then smooth it up by going over it with a brush and water. Now sprinkle glass frosting or smalts over this base and when it becomes dry you will have a very attractive mounting board.

Preserving Wings

If you wish to preserve the wings of birds for ornaments or millinery purposes, you should do the work while the wings are still fresh, before they become dry. Leave all of the wing bones in, but cut off the enlarged joint next to the body. Invert the skin to the first joint and cut away all of the meat and flesh. Cut open the wing on the under side along the bone entirely to the point and remove all of the flesh.

Now paint along the bones and inside of the wing skin with arsenical paste. Pass a small wire along the bones of the wing and tie it to the bones in several places. Now sew up the incision which you made in the wing and restore the feathers to their natural positions. Thoroughly clean the wings by dipping them in gasoline, and dry by rubbing full of plaster-of-Paris, beating it out quickly. Now wrap the larger bone with a little cotton to replace the muscles and adjust the wings to any desired position. By pinning the wings on card boards or placing them under weights until dry, they will remain permanently in the position that you give them. A little practice enables the milliner to prepare many varieties of attractive designs.

LESSON THIRTY-SEVEN

Care of Specimens in the Field

The information which we have given our student from time to time throughout our lessons will no doubt impress him with the fact that specimens of both birds and animals must be kept in good condition at all times before they are mounted, if they are ever to be put up satisfactorily. More specimens are ruined in the field than in Taxidermy shops.

Some persons are in the habit of sending rotten, slipping, stinking hides or skins to the Taxidermist, and expect him, through some hocus-pocus, to transform them into perfect specimens of beautiful birds and animals. If the Taxidermist falls down on the job or notifies the party that he cannot do the work, then the Taxidermist is either a thief or incompetent.

Anyone with a little common sense ought to know that it is impossible to set the feather or hair on a rotten skin, or to make two hairs grow where but one grew before. If the hunter or sportsman will take care of his specimens and get them to the Taxidermist in good condition, the chances are that he will get good work, and if you want perfect trophies, do your part when you take them in the field.

First and Most Important of All Is the Proper Skinning

If the animal is skinned right and the hide allowed to dry under proper conditions, it is bound to be in good shape when it reaches the Taxidermist.

For example, if you secure a moose head in the wilds of Canada, do not cut the head off back of the ears, but leave a long neck. **DO NOT UNDER ANY CIRCUMSTANCES EVER MAKE A CUT ON THE THROAT. ALWAYS MAKE THE INCISION DOWN THE BACK OF THE NECK.**

Skin the head properly, and do not cut it full of holes. Leave all of the lips, nostrils and eyelids on the hide. After you have the skin completely removed, cut away all of the clinging fat and flesh from all parts of the hide.

Cut away all of the heavy gristle and flesh at the base of the ears, and if you can, skin the ears to the very tips by inverting them wrong side out. **EVERY PART OF THE HIDE MUST BE SKINNED AND THE HIDE EXPOSED SO THAT IT WILL DRY.** Any parts that are not opened up and skinned out will probably rot and the hair slip. After you have the hide skinned and fleshed, then stretch it out, flesh side up, in the shade—**NEVER IN THE SUN.** Allow it to become thoroughly dry and hard. You do not need to put a single chemical on the hide unless you are in a very damp or hot climate; then you should load the hide down with salt and leave it stretched, flesh side up, until it becomes dry and hard.

NEVER UNDER ANY CIRCUMSTANCES ROLL A FRESH HIDE UP, EXPECTING IT TO DRY IN THIS WAY, FOR NINETY-NINE TIMES OUT OF A HUNDRED IT WILL SPOIL. Do not wad a hide up into dozens of wrinkles, but have it nice and smooth, for the wrinkles are apt to cause the hair to slip from these places when it is soaked up.

Here is the Whole Secret of Taking Care of a Hide in the Field

Skin it out absolutely, fully and completely and without exception into every part, nook, corner and cranny. Dry in the shade, and get it to the Taxidermist as soon as you can. If you have to keep the hides on hand for some time, roll them up after they are dry and cover them heavily with Naphthaline Flakes, or pack a large quantity of moth balls around them, to keep the insects away.

Bacon beetles do more damage to hides than all other insects. You should watch out for them and if necessary hang the hides out occasionally in the air and beat them to remove any bacon beetles or other insects that may have found their way into the hides.

The same instructions that we have given you in regard to this moose head should be followed on all other animal specimens. If you have a whole bear, lion, bob cat or anything of this kind, skin carefully as we have instructed, and be sure **THAT YOU SKIN OUT THE FEET ENTIRELY TO THE TOE NAILS. SPLIT THE TAIL ON THE UNDER SIDE, TAKE OUT THE BONE AND LEAVE THE TAIL SKIN SPREAD OUT SO THAT THE AIR CAN GET TO IT AND CAUSE IT TO DRY EVENLY.**

We hope we have been emphatic enough in regard to proper skinning, for practically the whole secret of saving your specimen lies in the question of skinning out all parts properly and then getting the hide dry quickly.

LESSON THIRTY-EIGHT

Utilizing Animal Feet

The feet of deer, elk, moose, etc., can be used to fine advantage in various ways. The principal use to which they are put is to make gun-racks, hat-racks, etc., and other useful articles, such as settings for ink wells, thermometers and ash trays. The following instructions will enable you to construct the various articles after you have tried them a time or two:

Hat and Gun Racks

In order to make the feet into rack, it is necessary to mount them firmly on either a large wire or rod, and to bend them as shown in figure 131.

First, skin out the leg entirely to the hoof. Usually about 7 inches of the leg is retained on deer feet. After skinning, cut and scrape all the flesh away from the bones and preserve the bone and skin with arsenical paste. You are then ready to make up the foot. Wind tow around the bone to replace the meat. Take a wire and bend it in the middle. Place it on the foot in the position shown in the cut, so that it hooks firmly over the du-claws at point "A." Now bend the foot and wire, as shown, and tie the wire firmly to the bones. Cover the tow-wrapped leg with potter's clay or plaster-of-Paris, and sew up the incision, commencing at the foot. The bone should not extend out to the end, within an inch



or two, for you must set the pine block "B" into the outer end, allowing it to extend far enough to reach through the shield. Tack the end of the skin to the block of pine, and wind the wires tightly to the block with fine copper wire or strong twine.

Select the shield you expect to use and bore holes in it to receive the block of wood. Then force the block into the holes and clinch the ends of the wire as shown at "C." You should cut into the back of the shield so the wires will sink out of the way, and then hold them with small staples.

Polish the hoof with boiled oil and pumice stone, and comb out the hair on the leg, and the job is done.

If you use an iron rod, which you should do if the bones are missing, then you set one end of the rod into the hoof, and build up the leg on the iron rod. In this case you may cut threads on the outer end of the rod and attach to the shield by means of nuts. This makes a very strong piece of work, but the wires are satisfactory for ordinary purposes.

Thermometers

Mount the foot exactly the same way as you do for gun-racks, but leave the leg **straight**. Set the pine block into the top of the leg, having it even with the end of the skin. It is not necessary to use the wire. Attach the thermometer scale to the leg with small screws, and set the top hanger in position, passing the screw into the pine block which you have provided.

In making thermometers you can leave the bones out as well as not, replacing them with pine sticks, which will receive the screws when attaching the scale. Polish the hoof, and thoroughly clean the hair of the leg.



Ink Wells

In making ink wells, only a few inches of the leg skin is used, with none of the bones. Skin and preserve the portion of the leg employed in the work, getting the preservative well around the hoof. Now cut off the two small du-claws, which are attached above the hoof, and **SEW THEM ON AGAIN LOWER DOWN**, so that they will rest on the table evenly with a hoof. This makes a firm, solid base for the ink well.

Now set a pine block into the leg skin, cover it with plaster-of-Paris, and sew up the back incision. The ink-well tops, which you can get from any dealer, should then be set into the top of the leg, in a bed of plaster-of-Paris. Polish the hoof, clean the hair, and the job is done.

The fittings for ink wells and also for thermometers are usually silver plated, and when used with the feet as directed in this lesson, make beautiful ornaments. They are often used for presents, and you may be sure they prove very acceptable.

LESSONS IN TAXIDERMY



*A Comprehensive Treatise on
Collecting and Preserving all
Subjects of Natural History*

BY

Prof. J. W. ELWOOD, B. S.

BOOK IX---Lessons 39 to 40

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LESSON THIRTY-NINE

How to Collect and Preserve Insects

Of all the various branches of Natural History, none has received more thoughtful consideration nor offers a broader field of investigation than the subject of entomology—the study and classification of insects. The vast number of insects available makes the topic one of boundless extent to the amateur collector.

In this lesson, as in the foregoing ones, we confine ourselves to the important topic of properly collecting and arranging specimens for study and the cabinet, the classification and identification being left to the numerous excellent books that can be had on the subjects. Each collector should own several of the best of the books and study them. This, combined with the acute observation necessary in any branch of Natural History study, will enable the student to properly classify the specimens collected, which is of the highest importance.

Collecting

There is no rule to follow in finding insects. Experience in the field in your own community will soon teach you the most prolific sources. A few suggestions will, however, be found helpful.

Moths may be taken at night by placing a lighted lamp in some quiet place, well protected from the wind. Certain kinds of beetles and other desirable insects may also be taken in this manner. The hawk moth usually flies at dusk. Butterflies are never taken except in the daytime, and usually in the vicinity of the garden, flower beds and meadow.

You, of course, understand that the greater number of insects will be secured only by systematically searching for them in the fields, garden and woods; along the streams and the meadow. Go slowly, keep your eyes open and look in the unlikely as well as the likely places. The rotten log, sand pit, bridge and fence corners must be investigated.

Look under every clip, stone, old board, in the ground at the foot of trees and posts, in the water of the pond, and even investigate the slime and ooze from the bottom. Look every place and at most inopportune times. Be ever on the alert and never leave the house for even an idle stroll along the streets without a few pill boxes in your pocket for holding the specimens that may happen in your way.

Tools and Materials

For collecting in the field you will need the following list of materials:

One net.	Small bottle of chloroform.
Tweezers of various sizes.	Cyanide bottle.
Several pill boxes.	Gelatine capsules.
A number of glass vials.	Camel's hair brush.
A collecting box.	A trowel.
Insect pins.	Magnifying glass.
Several triangular envelopes.	Bottle of alcohol.

The Net

The insect net is used in taking butterflies, moths and other flying insects, and is indispensable. A good one may be made after the following plan at small expense:

Bend a piece of No. 3 telegraph wire about fifty inches in length into a circle and firmly attach the end to a handle four feet long. An old broom handle answers the purpose well, but is a little too heavy for the lady collectors.

The best way to attach the loop to the handle is to pass the ends of the wire through a hole near the end of the stick (from opposite sides), bend them upward along the wood and bind them firmly into place by winding with small copper wire.

Now make a conical net from mosquito netting, veiling or any light material, and sew it to the hoop. The cone should be about twenty inches in depth. Armed with this net, it is a skillful butterfly or moth that will manage to elude it.

The Cyanide Bottle

may be used in killing all insects secured, but more especially the moths and butterflies. Procure a wide-mouth bottle of about sixteen-ounce capacity. In the bottom place three or four pieces of cyanide of potassium, about the size of a hazel nut, and cover them to the depth of one inch with fine, pine sawdust. Now mix plaster-of-Paris to the consistency of cream, and cover the sawdust to the depth of half an inch. It will soon "set," and after providing a good, close-fitting cork, the collecting bottle is done.

CAUTION—The fumes of the cyanide are exceedingly poisonous and penetrating. Keep the bottle securely corked and handle it in every way as you do any substance of similar nature.

After the insect is secured, drop it into the bottle and securely cork the same. After a few moments the specimen will be dead and may be removed and pinned in your

Collecting Box

This box is used in bringing the specimens home from the fields. A cigar box does very nicely. Carefully line it with white paper and glue a sheet of cork in the bottom and it is ready for use.

Collecting the Specimens

Most specimens may be killed with cyanide bottle. Some collectors, however, prefer the use of chloroform, which is applied with the camel's hair brush to the side of the insect, which usually kills it instantly. Such specimens as heavy bodied moths may be killed by gently squeezing the thorax with the thumb and finger, but it is apt to spoil the insect for the cabinet. Worms, larvae, etc., should be placed in the bottle of alcohol and taken home in this manner. Beetles and other bugs may be carried in the pill boxes and capsules.

In general, however, after the insect is dead, pass a pin through the thorax and fix it to the cork in the bottom of the collecting box. Do not place them too closely together, as they are apt to be injured in transportation. Avoid handling the butterflies and other delicate insects with the hands, as the small scales that impart beauty to the specimen are sure to be disturbed.

Preparing for the Cabinet

Before the specimens are ready for the cabinet they must first be placed on the MOUNTING BOARD to be given their proper position, and in order that they may become thoroughly dry.

The mounting boards should be made from soft pine three inches wide, ten inches long and one inch in thickness. Along the center is a groove one-half inch deep and varying from one-sixteenth to one-fourth inch in width. The bottom of the groove is covered with a strip of cork. These boards may also be made by placing two strips of wood the proper distance apart and nailing a third one on the bottom. Several of the mounting boards will be found necessary.

Now take the specimen (a butterfly, for example) and pass one of the long, slender insect setting pins through the middle of the thorax. Press the point of the pin firmly into the cork in the groove, allowing the body of the insect to enter the groove. Spread the legs and antennae into the desired positions and secure them with ordinary pins. Arrange the wings on the flat surface of the setting board and lay upon each one a small slip of glass about one-half inch by two inches. If the glass is not available, small slips of white paper may be pinned over the wings, holding them in position. Several insects may be mounted on the same board, after which they must be put in an airy place and left for three or four days, or until perfectly dry. When perfectly dry, carefully remove the glass and pins, grasp the setting-pin at the top and withdraw it from the mounting board.

Always handle the insects with the tweezers and the setting-needle (a common sewing needle set in a small wooden handle). After drying, they are extremely brittle and must be treated accordingly. Many entomologists are now bending the legs under the body in order to protect them, but we do not recommend this method, as the beauty of the specimen is thus much impaired.

Most insects are pinned through the thorax (the middle division of the body), but there are a few exceptions. With beetles, pass the pin through the right wing-cover. Very small specimens must be glued to triangular bits of white paper and the pin made to penetrate the paper rather than the body of the specimen. Among the latter class are the flea, mosquito and "jigger."

Spiders and other insects with large and fleshy bodies must have additional attention. Make an incision on the under side of the body and carefully press out the contents, after which the body may be stuffed with fine cotton, inserted with a blunt-pointed needle. Another method is to inflate the body with a blow-pipe, turning the specimen above the flame of an alcohol lamp or charcoal fire until dry, when the proper shape will be retained.

Caterpillars must be treated in the same manner, after which they are glued to small white cards and filed in the cabinet.

Earth worms and all similar specimens are best preserved in a solution of alcohol and water in a proportion of two to one, respectively. The bottles should be kept tightly corked.

Permanent Cabinets

cost considerable money, and it is not all of us that can afford the luxury, though they are certainly most desirable. In lieu of these, every collector may construct for himself boxes that answer all the purposes of the finest cabinets, but are, of course, less attractive and not so handy.

These boxes should be about 9x18 inches and 2 inches deep, with a tight wooden bottom, covered with sheet cork. Line the boxes nicely with white paper, gluing it to the sides. The cover may be made from wood or glass, and in either case must fit very tightly. The specimens are mounted in any of the approved orders, by embedding the point of the setting-pin in the cork bottom. The cork, as well as the other material, can be procured at a small cost from any dealer in naturalists' or entomologists' supplies.

Identification

Nothing is of more importance than proper identification and classification. Without this the collection loses much of its value, and the study a large part of its interest. Be accurate in your classifications and NEVER GUESS AT ANYTHING. Make good use of your eyes and your note-book. Keep perfectly classified information of every specimen that you mount and so arrange your records that you can turn to its history instantly.

The following outline is only suggestive. Decide on a standard form and have a plentiful supply of classification cards printed:

Classification

Date -----
Common Name -----
Scientific Name -----
Place -----
Description -----
Distribution -----
Habits -----
Uses -----
Metamorphosis -----
Miscellaneous -----

Relaxing Dried Specimens

It often happens that insects become dry and brittle before we have an opportunity to mount them; or it is sometimes desirable to remount a badly put up subject. Fill a cigar box full of clean sand and saturate it with water. Lay the specimen on the sand and tightly close the box for several hours, when you will find the insect soft and pliable as when first taken. Do not attempt to bend the legs and wings too soon, however, as you are apt to break them off. For delicate specimens, place a small piece of tissue paper between them and the sand. Wings and legs when broken can be mended or replaced by the use of good strong glue.

We strongly advise the student of entomology to give all insects with fleshy bodies, spiders, caterpillars, etc., a bath of gasoline before mounting. This removes the grease and fluids that frequently spread over the surface of the body and destroy the beautiful colors.

Care of Specimens

As soon as the specimen is placed on the mounting board, give it a light covering of corrosive sublimate, using a camel's hair brush or an atomizer. Other insects are not apt to disturb the specimen when so protected, yet, as a further precaution, ALWAYS keep a few moth balls or disinfecting cones in the cabinet drawers and inspect your collection frequently. If you find any indications of pests, immediately place an open dish of chloroform in the box or drawer and close it tightly for ten or fifteen minutes.

Never leave the cases open for any considerable length of time, as you only invite danger to your hard earned prizes.

LESSON FORTY

How to Collect and Preserve Eggs and Nests

The largest number of eggs that the writer has ever seen in a private collection were absolutely worthless. No pains or expense had been spared in making the collection, but the one important thing had been neglected, namely, ACCURATE DATA AND CLASSIFICATION.

The young entomologist cannot learn too early that the identification must be positive and the record kept in such a manner that confusion is impossible.

A collection of eggs is indeed beautiful, and yet its office is alone to furnish information on the nesting habits of the birds that produce them.

We suggest that the student of oology provide himself with "Davie's Nests and Eggs of North American Birds," as well as several other standard publications, and thoroughly prepare himself in the art of identification.

Tools and Material:

Eggs

- Egg drills, numbers 1, 3, 4 and 5.
- Embryo hooks, numbers 8 and 9.
- One straight blow-pipe, 6-inch.
- One curved blow-pipe, 5-inch.
- One pair nickel-plated forceps with very fine points.
- One caliper rule for measuring eggs.
- One pair embryo scissors, curved.
- One pocket collecting case.
- One pair climbing irons, Eastern.
- Supply of data blanks.
- Labels.

There are three fundamental principles that must govern the collector if he expects to make a collection that has any scientific value whatever; all other points are secondary when compared with these:

FIRST—NEVER DISTURB A NEST OR REMOVE THE EGGS UNTIL YOU HAVE SEEN THE PARENT BIRD.

SECOND—NEVER TAKE THE EGGS OR NEST UNTIL YOU SECURE THE PARENT BIRD IF THERE BE A SHADOW OF A DOUBT IN YOUR MIND ABOUT IDENTIFICATION.

THIRD—NEVER ADD A SINGLE EGG TO YOUR COLLECTION UNTIL COMPLETE AND AUTHENTIC DATA HAS BEEN SECURED AND RECORDED.

Follow these suggestions and you have the secrets of scientific egg collecting. A miscellaneous group of unclassified eggs and nests are not worth the boxes that contain them. Just pause a moment while these truths soak in.

In collecting eggs and nests, as with insects, the student will use his own ingenuity in finding them. A study of the habits of birds, both from books and nature, will guide you somewhat in your hunting, yet the exceptions are so frequent that the only rule to follow is—simply look everywhere.

In nesting season watch the birds as they fly with bits of straw and other building material in their beaks. Locate the nest and later in the season you will be rewarded. By placing hemp, threads and strings in places frequented by the feathered friends, you will be able to locate many homes in the process of construction.

The richest find, however, will be made on your excursions, when you are fully equipped with climbers, gun and collection box.

When the nest is located, watch patiently in the vicinity until the mother bird has been seen to visit it and you have made your identification perfect. It is not safe to conclude that the nests belong to certain birds simply because you see them in the same tree or bunch of shrubbery. Exercise your patience until every doubt has been removed.

As stated above, if you cannot possibly identify the specimen, shoot it and carry it home with you, where you will get out your key and make every effort to ascertain the proper classification. If possible to do so, skin the specimen, preserve it carefully and send it to some reliable person for identification.

The eggs, when removed from the nest, should each be wrapped in a separate bit of cotton and packed in a suitable box or paper bag, which is numbered to correspond to the description in your field notebook and then packed in your collecting box.

On reaching home, carefully unwrap the eggs and lay them on cotton mats, each group together, and indicate the series by number. Do not trust the slightest detail to your memory.

The contents of the eggs will now be removed. With the drill, which must be as small as possible, bore a hole through the shell on one side, near the larger end. Insert the blow pipe and remove the contents. Do not make two holes on opposite sides, as oologists formerly did. Fill the blow pipe with water and force it into the egg, thoroughly washing the interior.

If the egg be in an advanced stage of incubation, it will be necessary to make the opening somewhat larger and remove the contents piece by piece with a small embryo hook. If a small quantity of water is introduced and the egg laid away for a few days, the operation will be facilitated.

The eggs are now ready for the cabinet. Keep each set together in a neatly constructed cotton nest, in a separate division of the drawer.

Each set has a separate number, and each egg in the set is also identified by a number. For example, the set is the 200th collected and contains five eggs. We shall write in ink on the under side (same side as the opening) 200-1, which means that this egg is number one of set

two hundred, and so on. In this way no two eggs can possibly have the same denomination. The label also accompanies the set and is as follows:

Set No. _____ Nest No. _____
Name, Common _____
Name, Scientific _____
Date _____
Locality _____ Situation _____
No. Eggs _____ Incubation _____
Measurements _____
Name of Collector _____

The measurements are easily taken with the caliper rule and are very important. Complete record books are kept of the history of each collection and nest, and so indexed that you can instantly turn to the page describing any particular egg or set.

Eggs may be safely transported through the mail by packing in wood or tin boxes. Wrap each egg in cotton, tie with thread and place small bits of cotton between the eggs in the box. Never use pasteboard boxes, as they are sure to be crushed and the contents destroyed. Use a small wood box containing cotton and carefully pack the eggs before mailing.

Many collectors use pine sawdust in the cabinet drawers instead of cotton, and it answers the purpose admirably.

Handle the eggs carefully at all times as they are very fragile, hence easily broken. You will learn this, however, by personal experience.

Nests

It is desirable to take the nests when possible, and make them the permanent receptacle of the eggs found therein. Great care must be taken that the shape is not destroyed, especially with loosely constructed nests. It is a good plan to carry a small saw with you and detach a portion of the limb, leaving the nest secured in the original manner.

Exact data must be taken on the location and construction of the nest. The kind of tree or bush (if located in one), distance from ground, material used, how attached, etc., are the most important points. The more complete the description, the better.

If the nest is not firm, you must bind it together by wrapping with thread, or even sewing it through with needle and thread.

In addition to the scientific value connected with nest collecting, an endless variety of artistic creations are possible along the line of Taxidermy make-ups.

What is more beautiful or suggestive than a natural limb on which the nest rests, with the parent birds hovering near, or the mother seated on the nest with the male swinging on the adjacent branches?

Your imagination will assist in planning these pleasing scenes, or better still, reproduce the conditions actually observed in the woods and fields. In concluding this lesson we must say again that too much care cannot be taken in the classification and identification of the oologist's specimens. Never act in haste or jump at conclusions.

Be accurate, be neat, be energetic, and you will succeed in a laudable degree.

Conclusion

This Lesson concludes the Course.

If the student has followed the instructions given in the preceding lessons minutely, devoted the proper amount of time to practice, and above all, written us for personal information on those parts of the work that have given him trouble, he should by this time be doing work of no mean appearance.

The information imparted in these lessons occupies the same place in our correspondence school as a text-book does in the college. It is a TEXT only. The discussions, explanations and demonstrations are to be distinct proceedings, after the lessons have been mastered as to facts. You must demonstrate the lessons on your experience. We furnish you the explanations by personal letter on request. By this method you obtain additional information on the questions that are not clear to you, and in a way that is impossible by general printed matter, however detailed it may be. If you have neglected this important personal work, by all means correct the error, and write us on every occasion that presents itself.

Books

There are a multitude of good books on nature subjects. Each Taxidermist should cultivate a taste for this class of literature and study it carefully. He should be able to classify all specimens that he secures or are brought to him for mounting. Among the books most desirable are the following, which we can supply at the prices named:

Bird Guide, Part 1, water and game birds, pocket edition, cloth.....	\$1.25
Bird Guide, Part 1, water and game birds, pocket edition, leather....	1.50
Bird Guide, Part 2, land and song birds, pocket edition, cloth.....	1.25
Bird Guide, Part 2, land and song birds, pocket edition, leather....	1.50
Flower Guide, pocket edition, cloth.....	1.25
Flower Guide, pocket edition, leather.....	1.50
Butterfly Guide, pocket edition, cloth.....	1.25
Butterfly Guide, pocket edition, leather.....	1.50
Tree Guide, pocket edition, cloth.....	1.25
Tree Guide, pocket edition, leather.....	1.50

(Postage on above group, each 5c)

Moths and Butterflies, Holland.....	5.00
Wild Flowers, 427 pages.....	2.50
Reptile Book, Ditmars.....	5.00
Insect Book, Hoar.....	5.00
Nests and Eggs of North American Birds, Davie.....	3.50
American Food and Game Fishes.....	4.00

(Postage on above group, each 25c)

We also strongly recommend the Nature Lovers' Library, in 6 volumes, as the most desirable work of the kind ever published. If you are interested in knowing more about the Nature Lovers' Library, write us for full particulars and booklet.

Artificial Eyes

As an accommodation to students, we carry a complete stock of the best artificial eyes, and a full line of Taxidermists' supplies, which we sell at reasonable prices.

Sizes of Glass Eyes for Various Birds

Size	For:
1	Hummers.
2	Canary, Warbler.
3	Snow Bunting, Swallow.
4	Orioles.
5	Tanager.
6	Lark, Grackle.
7	Small Snipe, etc.
8	Quail, Least Bittern.
9	Curlew, Prairie Hen.
10	Grouse, Grey Squirrel.
11	Mallard, Fox Squirrel.
12	Wood Duck, Hawk.
13	Long-eared Owl, Goose.
14	Screech Owl, Coon, Hawk.
15	Crane, Great Blue Heron.
16	Bald Eagle, Rabbit.
17	Golden Eagle, Jack Rabbit.
18	Barred Owl, Wild Cat.
19	Snowy Owl, Lynx.
20	Fawn, Mountain Lion.
21	Maine Deer, Puma.
22	Jaguar, etc.
23	Black-tail Deer, Antelope.
24	Sheep, Florida Deer.
25	Deer, Caribou.
26	Small Elk, Calf.
27	Elk, Moose.
28	Buffalo, Ox, Horse.

Catalogue of glass eyes and Taxidermists' supplies free on request.

Notice

If you have raw furs of any kind for sale, send us a list and we will quote you the highest market prices.

We have many calls from our students for unmounted game heads, also wolf, bear, lion and bob-cat skins. In case you have any of these you cannot use, send a list, naming your price, and we can likely sell them for you.

If you have a friend who you think might desire to learn Taxidermy, kindly send his name and we will mail him a catalogue.

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